NO_x BUDGET PROGRAM MONITORING CERTIFICATION

AND REPORTING INSTRUCTIONS

Ozone Transport Commission
Acid Rain Division, U.S. EPA
444 North Capital St., NW
Washington, DC 20001

July 3, 1997

NO_x BUDGET PROGRAM MONITORING CERTIFICATION AND REPORTING INSTRUCTIONS

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NO_x BUDGET PROGRAM MONITORING CERTIFICATION AND REPORTING INSTRUCTIONS

Introduction

On September 27, 1994 the Ozone Transport Commission (OTC) adopted a Memorandum of Understanding (MOU) committing the signatory States to the development and proposal of a region-wide nitrogen oxides (NO_x) emission reduction in 1999 and 2003[1]. The OTC MOU requires reductions in ozone season NO_x emissions from utility and large industrial combustion facilities, in order to further the effort to achieve the health-based National Ambient Air Quality Standard (NAAQS) for ozone.

In January, 1996 the OTC released the NO_x Budget Model Rule to provide State regulatory agencies a common framework for the promulgation of State regulations. The model rule reflects a consensus among the States and U.S. EPA on key regulatory elements of a NO_x Budget Program that implements the OTC MOU. Sections 11 - 13 of the Model Rule outline emissions monitoring, record keeping and reporting requirements for NO_x budget sources. Owners and operators of a NO_x budget source must monitor and report emissions for each affected unit at the source.

The OTC released a document entitled ***Guidance for Implementation of Emission Monitoring Requirements for the NO_x Budget Program (Technical Guidance)*** on January 28, 1997. This document provides additional technical guidance and clarification on the emissions monitoring, data collection and reporting sections of the Model Rule. For Part 75 units, Part 1 includes additional requirements for monitoring plans, monitoring in some common stack situations and emissions reporting. For non-Part 75 units, Part 2 includes a more detailed description of each monitoring methodology, initial certification requirements, ongoing quality assurance and quality control requirements, and addresses the basic record keeping and reporting requirements for each monitoring methodology.

This document and the ***Electronic Data Reporting Version 2.0***, developed and released simultaneously by EPA's Acid Rain Division, provide detailed instructions on the procedures for monitoring plan submissions and approvals and the reporting of emissions data for the NO_xBudget Program. These instructions reflect the requirements agreed upon by the participating States to ensure emissions measurement and reporting consistency and to facilitate the receipt, analysis and storage of emissions data by the NO_x Emissions

[1] "Memorandum of Understanding Among the States of the Ozone Transport Commission on Development of a Regional Strategy Concerning the Control of Stationary Source Nitrogen Oxide Emissions", signed September 27, 1994.

Tracking System (NETS). NETS is developed and maintained by the Acid Rain Division, U.S. EPA per the agreement of these States, as sponsored by the Ozone Transport Commission.

Part 1 of these Instructions is for Part 75 units only and supplements the Acid Rain CEMS Program Submission Instructions (May 12, 1995). Part 2 is for non-Part 75 units only and provides information necessary to comply with the monitoring, certification and reporting requirements for the NO_x Budget Program.

An owner or operator of a NO_x budget unit may obtain additional information on monitoring plans and certification from the responsible State regulatory agency or on emissions reporting from EPA's Acid Rain Division.

PART 1: INSTRUCTIONS FOR PART 75 UNITS

I. GENERAL REQUIREMENTS FOR PART 75 UNITS IN THE NO_x BUDGET PROGRAM

A. Time Line for Submissions and Requirements for Owners and Operators of Sources that Must Install Additional (Non-Part 75) Monitoring Systems

In general, owners and operators of sources already subject to the monitoring provisions of Part 75 will not have to install new monitoring systems to meet the monitoring requirements of the OTC NO_x Budget Program. There may, however, be some instances when a unit with a common, multiple or other complex stack or pipe configuration may have to install additional monitoring systems to meet the requirements of the OTC NO_x Budget Program to report NO_x mass emissions. If an owner or operator must install additional monitoring systems, they should meet the applicable deadlines for non-Part 75 NO_x budget units.

B. Time Line for Submissions and Requirements for Owners and Operators of Sources that Do Not Need to Install Additional Monitoring Systems

Owners and operators that do not need to install additional monitoring systems must still modify the data acquisition and handling systems of the Part 75 monitoring systems to support the calculation and reporting of NO_x mass emissions and must update the monitoring plan to include the necessary formulas. Owners and operators should meet the submission deadlines defined by the State for monitoring plan submission and DAHS upgrades.

C. 1998 Emissions Reporting

Beginning in third quarter, 1998, the Designated Representative (DR) of a Part 75 NO_x budget unit affected by this program must submit an EDR containing both the required Part 75 emissions data and NO_x Budget Program data. This file may be in either EDR v1.3 or in EDR v2.0 format. If you submit the file in EDR v1.3 format, it must contain the following additional EDR v2.0 records:

RT 102	Facility Location
RT 505	Program Indicator for Report
RT 520	NO_x Mass Emissions Formulas
RTs 930 and 931	NO_x Budget Program Certification (required in any voluntary electronic submissions)

Also, modify RT 100 to report the EDR Version in column 15 as V1.3B.

It is not necessary to submit hourly NO_x mass emissions data in 1998.

D. 1999 Emissions Reporting

Beginning in second quarter, 1999, DRs for Part 75 NO_x budget units must report hourly NO_x mass emissions. In addition to the records required above, report:

RT 307	Cumulative NO_x Mass Emissions
RT 328	Hourly NO_x Mass Emissions

Report EDR Version in RT 100, column 15 as V2.0.

E. **2000 Emissions Reporting**

EPA is currently preparing proposed revisions to Part 75. Acid Rain facilities will be required to meet the reporting requirements of these revisions in the first quarter of 2000.

PART 2: INSTRUCTIONS FOR NON-PART 75 UNITS

I. GENERAL INFORMATION FOR NON-PART 75 UNITS IN THE NO_x BUDGET PROGRAM

A. Introduction

State regulations implementing the NO_x Budget Program require all affected units to determine NO_x mass emissions from certified systems during the ozone season (May through September), beginning on May 1, 1999. States are also requiring installation of monitoring systems and reporting of emissions data beginning on July 1, 1998.

Owners and operators must report hourly NO_x mass emissions to the U.S. EPA Acid Rain Division, who has the responsibility for receiving and checking the data and reconciling emissions and NO_x allowances for each season. To ensure that the NO_x mass emissions are determined on a consistent basis throughout the Region, the guidance and State regulations require submission of a monitoring plan and, for most measurement methodologies, test data for NO_x Budget Program certification. States must certify all continuous emissions monitoring systems (CEMS) and fuel flowmeters systems, as well as any alternative monitoring systems.

B. Purpose

The purpose of these instructions is to provide the necessary information for owners or operators to meet these program requirements. The instructions walk you through the necessary steps for identifying monitoring methodologies, certifying these systems, and reporting the required data.

This instruction document is designed to cover the following submissions: 1) petitions and monitoring plans; 2) certification testing notification; 3) certification application and 4) quarterly reports. A separate companion document, ***Electronic Data Reporting Version 2.0 (EDR 2.0)***, provides information on the electronic data reporting file formats and record structures and should be consulted whenever instructions are provided for specific record types.

C. Time Line for Submissions and Requirements

An owner or operator of a NO_x budget unit (not in long term shutdown on July 1, 1998) must meet the deadlines specified in Table 1 below. States encourage all owners and operators to begin this process as soon as possible, noting that early submissions of petitions and monitoring plans will enable State agencies to respond more quickly and thoroughly to the submissions. In particular, owners and operators should submit petitions for alternative monitoring methodologies as soon as feasible, so that any necessary adjustments to the methodology or reporting requirements can be made well in advance of the program participation date.

TABLE 1

NO_x BUDGET PROGRAM SCHEDULES AND DEADLINES			
Document	**Action**	**By Whom?**	**Deadline**
Petition for Alternative Monitoring	Submission	Source	As soon as possible
	Approval	State Agency	Consult your State Agency
Monitoring Plan	Submission	Source	Consult your State Agency
	Completeness Determination	State Agency	Consult your State Agency
	Approval	State Agency	Consult your State Agency
Certification Test Notice and Protocol	Submission	Source	___ Days prior to Test, per State requirements
	Approval of Protocol	State Agency	Per State requirements
	Conduct Certification Tests for CEMS	Source	April 30, 1999*
	Conduct Certification Tests for Alternative Monitoring (i.e., App. E)	Source	April 30, 1999*
Certification Application	Submission	Source	Earlier of: 45 Days after completion of last test or per State Requirements (All certification testing must be completed by April 30, 1999)*
	Approval/Disapproval	State Agency	Consult your State Agency
N/A	Begin Recording Emissions Data	Source	July 1, 1998
First Quarterly Report	Submission	Source	October 30, 1998
N/A	Begin Monitoring from Certified Systems	Source	May 1, 1999*
First Report of Certified Data	Submission	Source	July 30, 1999*
Feedback on Quarterly Report	N/A	EPA	Within 45 days after submittal

* These deadlines may be earlier if an owner or operator seeks early reduction credits.

D. **Petitions**

In order to use an alternative monitoring methodology, long term fuel flow measurements, identical unit testing to determine NO_x mass emissions and heat input for the NO_x Budget Program or to receive approval for other variations in certification tests, you must submit and receive approval of a petition from the appropriate State regulatory agency. Consult the ***Technical Guidance*** for detailed information on the methodologies and test requirements which require prior approval and the content of petitions.

II. MONITORING PLAN SUBMISSIONS AND APPROVALS

Following approval of any petitions, you must submit a monitoring plan which identifies all emission measurement or estimation methodologies used for the NO_x Budget Program. Submit two copies of this plan to the responsible State agency and one copy directly to the Acid Rain Division, U.S. EPA. This plan will be reviewed and approved by the responsible State agency. If the monitoring plan is incomplete, the State will notify you. This incompleteness determination will specify the information required and a deadline for submission.

When the State has received all required and requested information, it will review the monitoring plan to determine if the monitoring methodologies conform to NO_x Budget Program requirements. EPA will provide comments to the State agency on the proposed reporting methodology for incorporation into the State review and approval package.

A. **Content**

At a minimum, the monitoring plan must contain the following:

- EDR Monitoring Plan Records

  RTs 100+
  RTs 500+
  RTs 900+ (optional)

- Hardcopy Supplementary Materials including Schematics, Engineering Drawings, Data Flow Diagrams, and Other Documentation, as described below.

B. **Schematics**

For each unit (or group of units sharing a common stack) covered by this plan and using a non-default based monitoring methodology, prepare a schematic diagram. For units using CEMS or any form of parametric monitoring for heat input depict in the schematic the monitoring components, control systems and stack configurations. For CEMS, indicate points of air in-leakage, other factors affecting concentration (e.g., reheat burners, recombined ducts, etc.), flow disturbances, and all other elements that may affect whether the sample obtained is representative.

For oil or gas-fired units using fuel flow monitoring, include schematic diagrams which depict fuel flow and any recirculation, and show the fuel flow meter location(s) and sampling points.

In addition to the hardcopy submission, you may submit electronic versions of schematics in files using standard graphics file formats, such as .DXF, .PCX, or .TIF. Clearly label and identify the graphic file using recognizable file names (such as the facility ID and unit ID and the extension indicating the graphic file type).

Please use the symbols provided in the legend below.

Figure 1: LEGEND

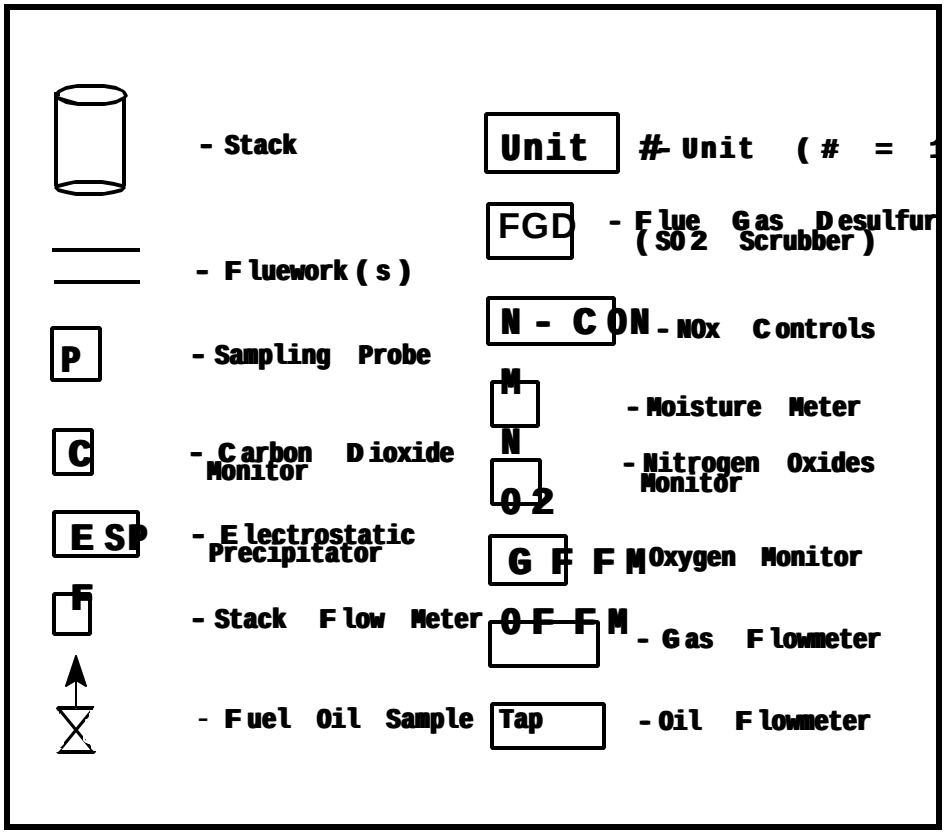
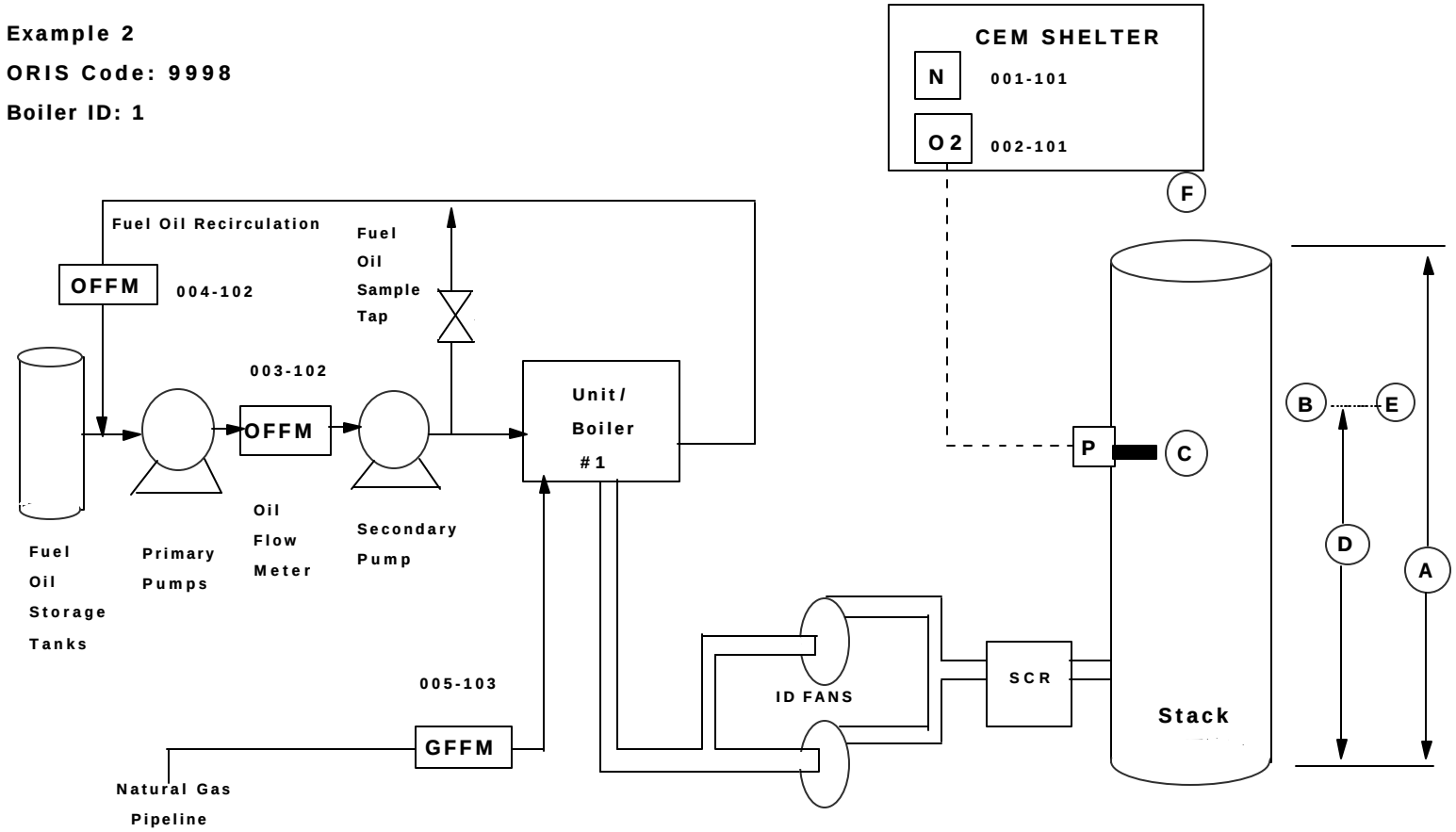


Figure 2: EXAMPLE SCHEMATIC OF OIL/GAS UNIT WITH NO_x CEM



MONITOR LOCATION INFORMATION

A. STACK HEIGHT ABOVE GRADE (FT) ----------400
B. STACK DIAMETER AT TEST PORT ----------23.36
C. INSIDE CROSS-SECTIONAL AREA AT TEST PORT (FT2) ----------428.58
D. TEST PORT ELEVATION
   1. ABOVE GRADE (FT) ----------327.23
   2. ABOVE LAST DISTURBANCE
      A. FEET ----------196.73
      B. STACK DIAMETERS ----------8.42
   3. PRIOR TO NEXT DISTURBANCE
      A. FEET ----------72.75
      B. STACK DIAMETERS ----------3.11

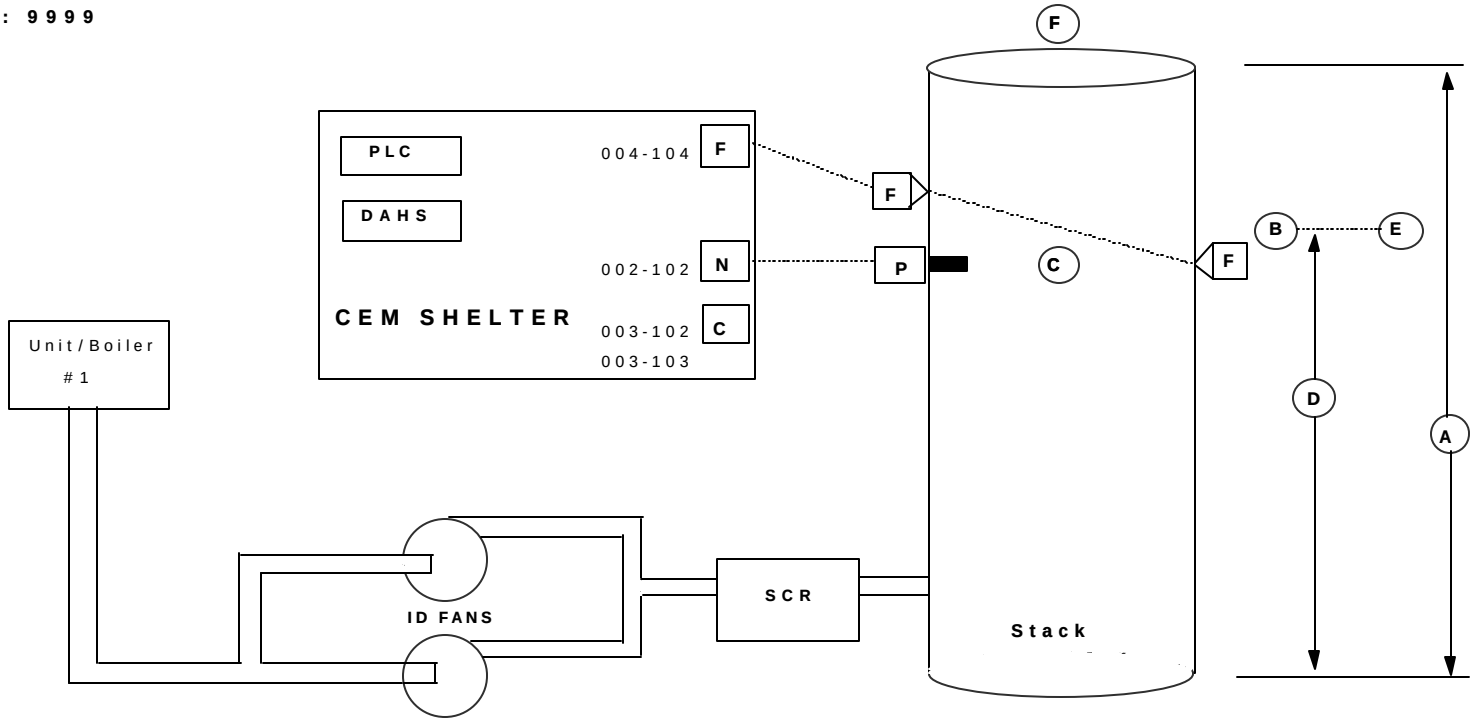
E. LOCATION OF SAMPLE PROBE. GASEOUS EXTRACTION PROBE IS IN SAME PLANE AS TEST PORT. OPACITY PROBE AT 1.0 FT. ABOVE SAMPLE PROBE ELEVATION.
F. INSIDE CROSS-SECTIONAL AREA AT FLUE EXIT (FT2) ---------- 428.58

Figure 3: EXAMPLE SCHEMATIC OF SINGLE UNIT STACK

Example 1

ORIS Code: 9999

Boiler ID: 1



MONITOR LOCATION INFORMATION

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B. STACK DIAMETER AT TEST PORT ----------23.36
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B. STACK DIAMETERS ----------3.11
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F. INSIDE CROSS-SECTIONAL AREA AT FLUE EXIT (FT2) ----------428.58

C. **Engineering Drawings**

Also submit engineering drawings or scale diagrams. Blueprints are not required. If these drawings have been previously submitted to the State regulatory agency for other programs or purposes, reference the prior submission and describe its content and purpose. For units using CEMS, the engineering drawings should include:

- Upstream and downstream flow disturbances around sampling locations;
- Inside cross-sectional area (ft^2) at flow monitor locations;
- Inside cross-sectional area of each flue exit to the atmosphere; and
- Specific sampling points or monitor path in the cross-sectional area at the monitor location.

D. **Data Flow Diagrams**

Submit a data flow diagram which depicts the information handling path from monitors or fuel flow meters through the DAHS component(s). Include a brief description of each piece of software and any programmable logic controller(s).

E. **Other Documentation**

Submit with the hardcopy submission any other documentation related to monitoring approaches or reporting with the plan. This documentation should include, as appropriate, the following types of information:

- Documentation of moisture constants proposed for oil and gas CEMS units;
- Documentation of span and range values for CEMS;
- Documentation of CEMS location;
- Copies of or references to previously submitted petitions and petition approvals; and
- Documentation of selected defaults, maximums or minimums used for missing data purposes.

F. **Consolidated Monitoring Plan Submissions for "Identical Units"**

To facilitate preparation, submission and review of monitoring plans for non-CEMS based units which are similar in terms of their fuels, operation, configuration, selected monitoring approaches, data reporting, and missing data procedures and which have identical software, an AAR or AAAR may submit a single Consolidated Monitoring Plan for these units. The same AAR and AAAR must be responsible for all units in the Consolidated Monitoring Plan. The same State regulatory agency must be responsible for reviewing and approving the monitoring plan for all units.

Include in the submission the following:

- A list of all units represented by the Consolidated Monitoring Plan, clearly identifying the unit by ORIS Code (or equivalent), facility name, unit ID, and location.

- A brief description of the type of units, fuels combusted, monitoring approaches and other factors which qualify these units for a Consolidated Monitoring Plan.

- A single schematic representing the units' configuration.
- A single copy of representative engineering drawings.
- A single copy of a data flow diagram.
- A single copy of a petition or other supporting documentation required to support the proposed monitoring methodologies or defaults.
- For each unit in the Consolidated Monitoring Plan, submit a complete, individual set of electronic monitoring plan data, including RTs 504, 505, 507, 510, 520, etc. for each unit.

  In these records you may assign the same monitoring system and formula IDs for each unit.

  The monitoring plan data for all units may be submitted in a single file by facility and unit beginning with the lowest Facility ID and continuing in Facility ID order. Represent each new facility in the file by reporting a new RT 100, followed by RTs 102, 103 and 500+ for each unit located at the facility.

  If the identical units are part of an identical unit group for determining Appendix E NO_x emission rate correlations or unit-specific NO_x emission rate defaults, you may include one set of RTs 660 and 661 at the end of the file.

III. **CERTIFICATION TEST NOTICE**

The AAR or AAAR should submit certification test notices and protocols to the appropriate State agency according to State requirements. States will approve the test protocols according to State policy. If the certification test date changes from the originally scheduled date a test renotification may need to be submitted. Consult your State agency for specific requirements.

IV. **CERTIFICATION APPLICATIONS**

The certification application must contain a certification application form and electronic monitoring plan and test results (RTs 100+, 500+ and 600+) and hardcopy test results as specified by the State agency. Consult your State agency for specific requirements.

The State will review the certification application and inform the AAR if additional information is required.

After all the certification tests are completed and passed, monitoring systems are deemed to be provisionally certified. The State will review the certification application and certify the monitors. If the State disapproves the monitoring system, then missing data must be substituted from the hour when the certification tests were completed.

V. **INTERIM QUARTERLY REPORT SUBMISSION REQUIREMENTS FOR NON-PART 75**

NO_x BUDGET PROGRAM REPORTS

This section contains preliminary quarterly report submission instructions for NO_x Budget sources. The purpose of this section is to ensure that basic information on reporting procedures is available to NO_x Budget Sources. EPA will release additional information, as necessary, when the reporting deadline approaches.

Submission Frequency and Deadlines

The NO_x Budget Program requires quarterly submission of emissions data directly to EPA's Acid Rain Division. For units using any CEMS based measurement methodology, AARs must submit a complete quarterly report for each quarter in the year. For non-CEMS units, AARs must submit two quarterly reports in July and October for the ozone season only. The submission deadline is thirty days after the end of the calendar quarter. If the thirtieth day falls on a weekend or federal holiday, the reporting deadline is midnight of the first day following the holiday or weekend.

Electronic Submission of Quarterly Reports

The AAR or AAAR must submit quarterly reports electronically to the IBM mainframe at EPA's National Computer Center (NCC). To facilitate this process for the Acid Rain Program EPA has developed and distributed ETS-PC, a PC software package used in conjunction with a modem to provide automated communications to the mainframe. This tool works in conjunction with mainframe programs to provide real-time feedback reports on the submission. ETS-PC is available on the Internet on EPA's Acid Rain Program Home Page.

EPA anticipates that ETS-PC will also support the electronic submission of quarterly reports for the NO_x Budget Program. Prior to the first quarterly report submission deadline in October, 1998 EPA will provide AARs with specific instructions regarding access to the mainframe and the use of ETS-PC. EPA will issue User IDs and passwords to allow access to the mainframe.

If you are unable to submit quarterly reports electronically, you may request exemption from this requirement on a temporary basis and submit quarterly reports on a diskette (see Diskette Submissions instructions below).

Mainframe File Naming Conventions

For electronic submissions, EPA will establish mainframe data set names for each facility. This mainframe convention is as follows:

ETSPNAAAAAA.UBBB.VBCLEAR.QCYYYY

where:

AAAAAA is the facility ID or ORISPL code
BBB is the stack or unit ID
C is the quarter (1,2,3,or 4) and
YYYY is the calendar year.

Diskette Submissions

If you submit on diskette based on an exemption from the electronic reporting requirement, please submit files on 3.5 inch IBM compatible diskettes. Clearly label all disks with the utility name and code, plant name, facility ID or ORISPL code, unit or stack IDs and the quarter and year represented. For security reasons, please "write-protect" all disks and package them to protect the files from damage during shipment. You may compress the files submitted on diskette using compression utilities resulting in self-extracting compressed files.

Use the following standard DOS file naming convention for files submitted on diskette. The first five digits contain the facility ID or ORISPL code assigned to the plant (preceded by a zero if the ID is only four digits in length). The sixth digit contains an alphabetical character that reflects the configuration of the unit or units in common or multiple stack configurations. For a single unit configuration this character should be a "U" and the seventh and eighth digits should identify the unit by unit ID. If the unit ID is only one character in length, use a zero for the seventh digit of the filename. (Note that this is the only place in which the unit ID is "padded" with a preceding zero.) For a unit with multiple stacks, the sixth digit should contain an "M" and the seventh and eighth digit should contain the unit ID. For common stacks the sixth digit should contain a "C" and the seventh and eighth digits should contain the unit numbers for the first and last units which exhaust into the stack. For all configurations, the extension contains the year and quarter.

For example, a single unit file (one unit exhausting through a single stack) for Unit 1 at Plant Mid-America (ORISPL 9999) would have the following filename for a quarterly report in third quarter 1998: 09999U01.983. Three units (units 6, 7 and 8) exhausting into a common stack (CS001) at the same plant in the same quarter would have the following filename: 09999C68.983.

If this explanation does not contain enough information to determine an appropriate filename, please contact EPA to determine an appropriate unique filename to handle your situation.

Submit all diskettes to the following address:

NO_x Budget Program Quarterly Report Submissions
Acid Rain Division (6204N)
US EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Certification Statements

Each quarterly report which is submitted electronically must contain certification statements as required by State regulation. See Section XII of this document and consult your State regulatory agency regarding the submission of RTs 930 and 931 for certification purposes.

Supplementary Information

To include supplementary information or an explanation of specific events or concerns, please use RT 910, as described below.

VI. EDR REPORTING FORMATS FOR THE NO_x BUDGET PROGRAM

A. EDR Record Structures

The EDR V2.0 tables provide the record structures which define the order, length, and placement of information within the electronic report or "file." All quarterly reports are ASCII files. The EDR provides the Record Type, Type Code, Start Column, Data Element Description, Units, Range, Length, Fortran (FTN) Format, and location on the hard copy form for each data element in the electronic report. A detailed explanation of the information in this table follows:

Record Type describes the type of information contained in the record and cites the appropriate section of the rule.

Type Code is the three-digit code for identifying the Record Type.

Start Column indicates the column in which the data element begins.

Units contains information about the unit of measure in which the value is reported (e.g., ppm for NO_x concentration data). Where applicable, the units column contains information related to how to format the date (e.g., YYMMDD).

Range provides information, if applicable, on the acceptable lower and upper values for the data.

Length indicates the number of columns designated for the data element.

Format specifies the type of characters and Fortran (FTN) format which should be used for the data element. There are three types: "I" for integer, "A" for alphanumeric, and "F" for fixed decimal point. A format of "I3" indicates that the data will be an integer of up to three digits. A data element with an "I" format should never contain a decimal point, and all data elements requiring an "I" format must be right-justified. Right-justification ensures that leading zeros are not necessary; instead, these spaces should be left blank. "A3" indicates an alphanumeric data element containing up to three characters, which may be either alphabetic or numeric and is left-justified. "F5.1" indicates a numeric field, five columns wide, with one numeral to the right of the decimal point. A decimal point (.) must be included in all data elements requiring an "F" format (fixed decimal point format). In addition, all data elements requiring an "F" format must be decimally-justified. In other words, the decimal point must be placed to allow the correct number of columns to the right of the decimal point. Decimal-justification ensures that leading zeros are not necessary; instead these spaces should be left blank.

Total Record Length indicates the total number of assigned spaces (columns) for all required data elements (e.g., for NO_x mass emissions, each record will appear as a single line, 44 columns in length).

Each record (line) must begin with the three digit "Record Type Code," followed by the associated data elements for the record type. The Record Type Code is a number which EPA has assigned to label a category of information to be reported. The Record Structure for each record type provides the location of each data element within the record. The following example shows the record structure for Record Type 328, "NO_x Mass Emissions."

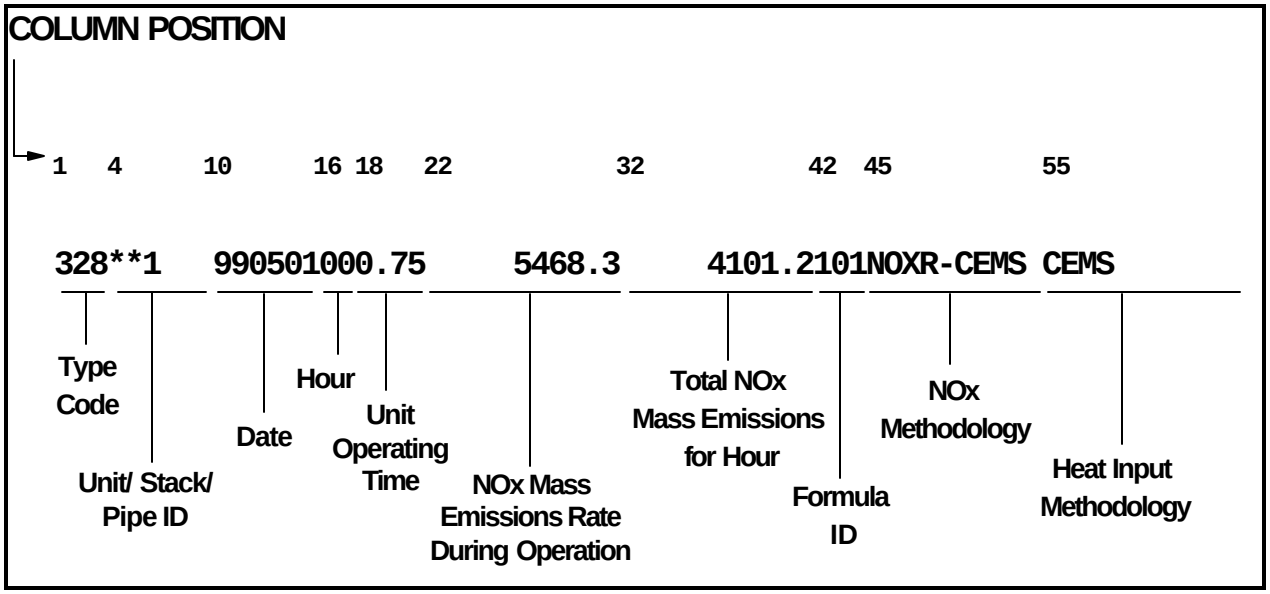
Illustration No. 1
EXAMPLE RECORD STRUCTURE FOR RECORD TYPE 328

UNIT DATA								
RECORD TYPE	**PROGRAM**	**TYPE CODE**	**START COL**	**DATA ELEMENT DESCRIPTION**	**UNITS**	**RANGE**	**LENGTH**	**FORMAT (FTN)**
NO_x MASS EMISSIONS								
NO_x Mass Emissions (New)	NBP	328	1	Record Type Code			3	I3
			4	Unit ID/Stack/Pipe ID			6	A6
			10	Date	YYMMDD		6	I6
			16	Hour	HH	00-23	2	I2
			18	Unit operating time		0.00-1.00	4	F4.2
			22	NO_x mass emissions rate during unit operation	lb/hr		10	F10.1
			32	Total NO_x mass emissions for the hour	lb		10	F10.1
			42	Formula ID from monitoring plan for total NO_x mass		01-04	3	A3
			45	NO_x methodology for the Hour			10	A10
			55	Heat input methodology for the Hour			10	A10
					Total Record Length		64	

Below is an example line of NO_x mass emissions data (RT 328). The top line of numbers indicates the starting column position for each data element. The second line of

numbers represents one hourly record of NO_x mass emissions data as they would appear in an electronic file.

Illustration No. 2
EXAMPLE DATA FOR RECORD TYPE 328



B. **Quarterly Emissions File Organization and Ordering**

(1) **File Content**

For quarterly reports data submitted in EDR 2.0 format, individual units associated with single stacks should be submitted in separate files, (e.g., for Plant A, one file would be submitted for Unit ID 1 and a separate file for Unit ID 2). However, all the units which exhaust through a common stack (or meter fuel flow at a common pipe) must be included in one file with all the data relevant to the common stack and each of the units associated with that common stack. All files for a specific common stack or multiple stack (or pipe) must contain all data relevant to the associated unit or units.

(2) **Record Order**

RT 100 must appear first in any electronic submission including quarterly emissions reports, certification application data, and electronic monitoring plan files. Following RT 100 report RT 102 for the facility. Following these records, order all records in the quarterly report file first by unit/stack/pipe ID, second by record type code, third by date and time, and fourth by component/system ID.

(3) **Stack or Pipe Record Orders**

For units that are associated with a common or multiple stack or pipe, report the data for the stack or pipe first, followed by the data for each unit. The units should be listed in alphanumeric order, regardless of their association with the stacks or pipes for which records have already been provided. Provide all monitoring plan records and test data in record type order with the appropriate unit, stack, or pipe. For an example, see Illustration No. 3.

(4) **Record Order for Quality Assurance Data**

Submit all daily quality assurance data (RTs 230, 231, 232, 233) in record type order with the unit or stack emissions data. Order these records by date and time, then by component and system ID. For records which may have more than one component/system record for the same unit and hour (for example, daily calibration error data in RT 230) the records should be in alphanumeric order by component/system ID. If there is more than one daily calibration record for the hour for a component/system, order these records by the time the daily calibration was completed. This record order is required; do not use alternative record orders.

For ongoing quality assurance data (RTs 600+) submit all records for a unit, stack or pipe with the unit, stack or pipe emissions data in record type order. Within each record type order the records using either the standard record order (unit, record type, date, time, component/system, span) or using the record order allowed for certification disks (unit, record type, component/system, span, date, time).

Illustration No. 3
EXAMPLE SUMMARY OF QUARTERLY REPORT CONTENT FOR TWO NON-PART 75 CEMS UNITS EMITTING THROUGH COMMON STACK

FACILITY INFORMATION

Type 100	**Record**	*(Facility and report data)*
Type 102	**Records**	*(Facility information)*

COMMON STACK FOR UNITS 1 & 2*

Type 201	**Records**	*(NO_x concentration data: by date and hour)*
Type 210	**Records**	*(Diluent data: by date and hour)*
Type 220	**Records**	*(Volumetric flow data: by date and hour)*
Type 230	**Records**	*(Daily calibration test data: by date and hour)*
Type 231	**Records**	*(Flow interference data: by date and hour)*
Type 300	**Records**	*(Unit operating parameters: by date and hour)*
Type 307	**Records**	*(Quarterly cumulative emissions data)*
Type 320	**Records**	*(NO_x emission rate data: by date and hour)*
Type 328	**Records**	*(NO_x mass emissions data: by date and hour)*
Type 503	**Record**	*(For Unit 1 (Common stack definition table))* *(For Unit 2 (Common stack definition table))*
Type 510	**Records**	*(Monitoring systems/analytical components table)*
Type 511	**Records**	*(System certification events)*
Type 520	**Records**	*(Formula table)*
Type 530	**Records**	*(Span table)*
Type 531	**Records**	*(Maximum used for missing data)*
Type 535	**Records**	*(Stack operating load data)*
Type 550	**Records**	*(Reasons for missing data periods)*
Type 555	**Records**	*(Monitoring system recertification events)*
Type 601	**Records**	*(Quarterly linearity test data)*
Type 602	**Records**	*(Quarterly linearity check results)*
Type 603	**Records**	*(Flow quarterly leak check results)*
Type 610	**Records**	*(RATA and bias test data)*
Type 611	**Records**	*(RATA and bias test results)*

UNIT 1 (MONITORED AT COMMON STACK)

Type 300	**Records**	*(Unit operating parameters: by date and hour)*
Type 504	**Record**	*(Unit information)*
Type 505	**Record**	*(Unit/program information)*
Type 585	**Records**	*(Monitoring methodology information)*
Type 586	**Record**	*(Control equipment information)*
Type 587	**Record**	*(Unit classification by fuel type)*

UNIT 2 (MONITORED AT COMMON STACK)

Type 300	**Records**	*(Unit operating parameters: by date and hour)*
Type 504	**Record**	*(Unit definition table)*
Type 505	**Record**	*(Unit/program information)*
Type 585	**Records**	*(Monitoring methodology information)*
Type 586	**Record**	*(Control equipment information)*
Type 587	**Record**	*(Unit classification by fuel type)*

CERTIFICATIONS

Type 930	**Records**	*(Certification electronic signature)*
Type 931	**Records**	*(Certification statement)*

* Assumes that one of the two units operated during all hours of the quarter.

C. **General EDR Instructions**

(1) **Identification Numbers**

To ensure accurate processing by NETS, each record in the quarterly report must contain consistent and accurate ID numbers.

(a) **Facility IDs**

Utility units use the plant code (otherwise known as an ORISPL code) which is an integer data element assigned by DOE to identify the facility or plant. For some units, the ORISPL code can be found in the NO_x Budget Program Baseline Inventory. You can also obtain the plant code from the Energy Information Administration, Department of Energy (DOE) from Form EIA-860, "Annual Electric Generation Report." Non-utility units that are associated with generators can also obtain their facility code (non-utility version of the plant code) from EIA/DOE from Form EIA-867, "Annual Non-Utility Power Producer Report."

If you do not have an ORISPL code for a facility (because you are not required to make reports to EIA) contact EPA's Acid Rain Division or your State regulatory agency to determine what facility code you should use.

The ORISPL code is six digits in length and for purposes of reporting is right-justified and padded with leading zeroes. For example, a plant with an ORISPL code of 786 would appear in RT 100 as 000786.

(b) **Unit IDs**

Each unit at a facility must have a unique Unit ID. The Unit ID is an alphanumeric data element which is six characters in length.

The Unit ID must be included in the quarterly report exactly as it appears in the Unit ID column in the allowance allocation list or data file. Include leading zeroes or asterisks (*) just as they appear in this file.

If a unit is not listed in the allowance allocation list you may submit a Unit ID of your choice in the monitoring plan. In general, the Unit ID should conform to the nomenclature used by plant personnel and/or State agencies to identify a unit. It should also be consistent with the Unit ID used on all other NO_x Budget Program submissions including submissions related to allowances or authorized account representatives. For example, use Unit ID "1" for Boiler #1 and "CT1" for combustion turbine #1. Use the Unit ID submitted in the monitoring plan for all future submissions for the unit.

When used to identify data in an EDR file, the Unit ID must be left-justified (there must not be any leading blank spaces), using blanks on the right if necessary to fill the remaining spaces.

For example,

Unit ID "003A" would be formatted as follows:

003A**OO** (for illustration "**O**" = blank space)

Unit ID "2" would be formatted as:

2**OOOOO**

Do not report unit "5" as unit "05," "005" or "000005". These are considered to be different, unique IDs.

(c) **Stack and Pipe IDs**

For common or multiple stack configurations, the reported stack/pipe ID must be the ID submitted in the monitoring plan for the source. When you assign a stack or pipe ID, you must use one of the following prefixes to define the type of stack or pipe header:

CS -- For common stacks (stacks serving more than one unit)

MS -- For multiple stacks (stacks associated with unit served by more than one stack or duct). This prefix is used for units which have bypass and primary stacks for a single unit. It is also used for units feeding into a common stack and also a single stack (for example, a bypass stack) to indicate that the unit is associated with more than one stack.

CP -- For common pipes (oil and gas fuel supplies serving more than one unit)

MP -- For multiple pipes (multiple sources or measurements of one fuel type serving a single unit)

The pipe or stack ID is an alphanumeric ID of up to six characters; in other words, the four characters to the right of the required prefix may be either numbers or letters. The use of commonly used stack identifiers (i.e., CS1 for stack 1) is recommended. Once a stack ID is assigned, it should not be changed.

As an alphanumeric field, the ID should always be left justified for EDR reporting purposes. See the examples for Unit IDs provided above.

For any unit emitting through more than one stack, all stacks associated with the unit must be identified as either a common or multiple stack. For example, if Unit 1 emits to a common stack (CS12) with a scrubber for most operating hours, but to a dedicated unit-only stack during scrubber bypass conditions, you must identify the bypass stack as "MS1."

(2) **Data Editing and Quarterly Reports**

Hand-typed "correction" of emissions data is not permitted. Do not edit emissions or test data other than those record types or in those situations specifically described below. You may request specific approval of exceptions to this policy by submitting a written petition or request to the appropriate State regulatory agency. The State regulatory agency will respond in writing to provide specific exceptions on a case-by-case basis or in OTC NO_x Budget Program guidance. Manual data entry of ***emissions values*** recorded elsewhere or recorded only on hard copy reports or strip charts is not permitted, nor is manual data entry of ***daily calibration values*** permitted. Manual data entry of ***operating parameter values*** such as daily steam load and some daily quality assurance checks (i.e., visual checks and QA test exemption records), which are not usually captured by the DAHS, and ***monitoring***

plan data (including all 500 level records) is permitted. You may also manually enter fuel sampling results.

It is acceptable for the DAHS to replace invalid data with either backup monitor data or missing data substitution.

If data is recorded by a separate (certified) DAHS component or provided by independent test contractors (for example, RTs 610 and 611 for an annual RATA) the company may electronically merge the data with the data file containing routine emissions and daily calibration records. Daily calibration records may also be merged, if they are recorded electronically by a DAHS component identified as a system component in RT 510 of the monitoring plan. In addition, 900 level records do not have to be created by the DAHS; they could be manually created in a separate file and merged. The final quarterly report file, containing all records, must be sorted in the required record order. Note that if you do manually insert any records, ensure that the merged file is saved in ASCII text format.

States allow a company to determine, using sound engineering judgment, that a measured emissions value or other parameter is clearly in error and should be invalidated. When this occurs, document the error and replace the erroneous measured value with a quality-assured measured value or parameter from a backup monitoring system or with a substitute value according to missing data procedures.

Also, during start-up and shutdown or when the efficiency of an emission control device approaches 100% there may be very small emissions, and a CEM may record "negative" emissions values. In these cases replace the negative emissions value with zero. To address these problems you may "edit" the erroneous data directly to identify a missing data period or use of a backup system. For negative emissions values, States allow either automatic replacement by the DAHS or manual replacement of the negative value with zero. Please note that a CEMS may also record negative values during calibration or other QA tests; negative readings during these tests are valid and should <u>not</u> be replaced.

(3) **Deliberate Record Omissions, Blanks, and Zeros**

Within one record, where some but not all data are reported, unused columns should be left blank. For example, within RT 300, Unit Operating Parameters, the field beginning in column 28 is "steam load," which may be reported in lieu of gross unit load. If the facility is not using this option, then the AAR should submit RT 300 with six blank columns for steam load. Furthermore, blanks should be used when a data element does not entirely fill its allocated space. As specified above, alphanumeric fields ("A" format) should be left-justified, using blanks if necessary for the last few spaces, while integer fields ("I" format) should be right-justified, using blanks if necessary for the first few spaces. Fixed decimal point fields ("F" format) must be decimally-justified. For example, within RT 610, beginning in column 34, a value of 436.2 ppm recorded by the CEM would be reported with six leading blanks and two trailing blanks as follows in the "F13.3" format: "**OOOOOO**436.2**OO**" (for illustration **O**=blank space).

(4) **Hourly Data**

Report both hours and times according to the 24 hour clock: HHMM where HH is a two digit hour (00-23) and MM is a two digit minute (00-59). Format dates from left to right: YYMMDD where YY is a two digit year ($ 97), MM is a two digit month (01-12), and DD is a two digit day (01-31).

(5) **Reporting in Standard Time**

Report all data in standard time. Each hour reported in the file represents a clock hour, not an operating hour.

(6) **Computational Requirements and Rounding**

(a) **Computing Hourly Emissions Values**

When computing monitor readings for a specific hour (for example, NO_x concentration for the hour), use all the decimal digits which the DAHS computer normally employs for floating point calculations. Double-precision numbers (8 - 16 digits) may be used for these calculations and should be employed when needed to compute the recorded emissions value.

(b) **Rounding Conventions for Reported Data**

Whenever it is necessary to round a value to report it using the number of required decimal places, use the standard arithmetic rounding convention where "5" rounds to the next highest number in the previous decimal position to the left. Note that some fields in the EDR were designed to be generic and support reporting data for multiple purposes. For example, columns 34-46 of RT 610 are used to report "Value from CEM system being tested." In these cases, it is not always appropriate to report values to the number of decimal places in the EDR format based upon the number of decimal places to report the parameter measured. The number of decimal places that are reported should be the number of decimal places that are reported in the hourly record for the parameter. For instance, if you are performing a NO_x RATA, report the NO_x emission rate to three decimal places; if you are performing a flow RATA, report the data to the thousands place.

(c) **Use of Reported Data for Emissions Calculations**

Values which represent cumulative totals of or calculated values from previously reported data (such as NO_x emission rate, quarterly mass emissions, or arithmetic mean of CEMS values in columns 35-47 of RT 611) should use the rounded value accurate to the number of decimals specified in the ***Technical Guidance*** and defined in ***EDR V2.0***. For example, when you calculate NO_x emission rate in RT 320, use the values rounded to one-decimal place reported in RT 201 and 210 or 211 to perform the calculation. Do not use the values stored in the computer which may be stored as values of 8 or 16 places to the right of the decimal.

(7) **Requirements for Component and System IDs**

You must report a valid system and component ID for a certified monitoring system for all measured emission values. Exceptions to this requirement applicable to specific

record types and configurations are discussed below. NETS uses the monitoring system and component IDs to determine whether a CEMS or fuel flow system is reporting quality-assured data for a given hour. This includes checks of the system's status for certification and quality assurance tests, as appropriate.

For hours of missing data for emissions or fuel flow measurements reported in RTs 201, 210, 211, 212, 220, 302, 303, 320 and 350 leave the component/system IDs blank.

(8) **Data for Inappropriate Time Periods**

In general, do not submit any data in the quarterly report file representing emissions values recorded or testing performed for any time period outside of the applicable quarter and year. NETS will disregard any emissions data for dates or hours outside of the quarter identified in RT 100. However, it is acceptable to report quality assurance test data (for example, linearity or relative accuracy tests) from a prior quarter, if the test began in the prior quarter and ends in the current quarter. It is also acceptable to report summary data from relative accuracy tests in other reports (RT 611), as explained in section XI A.(5).

(9) **Information on Non-operating Hours**

For any hour for which the unit or stack did not operate, report a value of 0.0 in the field for unit operating time in RT 300 or RT 328. NETS relies solely on the unit operating time in these records to determine whether a unit, stack or pipe is operating.

(10) **Blank Emissions or Other Values**

Each hour of reported emissions data must contain a non-blank emissions value and an appropriate method of determination code. If these elements are missing, NETS assumes that the data is missing for these hours.

(11) **Calculating Percent Monitor Availability**

For missing data procedures based on availability, determine the availability for the first hour in which data is available after the missing data period. Calculate rolling annual availability on a pollutant/unit or pollutant/stack basis (not on an individual analyzer or monitoring system basis) using the formulas and other criteria provided in 40 CFR 75.32.

Use this percent availability to determine the appropriate substitution values for the entire gap. Although you may record the availability each hour, only percent availability for the first hour in which the monitor has resumed operation after the gap is used for missing data procedures.

For the quarter in which a missing data period extends past the end of the quarter, the missing data period is assumed to terminate with the end of the quarter. Calculate and report percent monitor availability for the last hour of the quarter. For the next quarter, in which the missing data period started prior to the start of the quarter, use the duration of the entire missing data period (including the time from the previous quarter) to determine percent monitor availability.

Valid monitor operating hours occur only during unit operating (or partial operating) hours. When the unit is not operating, the monitor operating hours are not counted in the missing data procedures. For example, if the CEM is down first for three hours with the unit still operating, then for four more hours while the unit is down, and then the unit resumes operating while the CEM is down for an additional three hours, the total missing data gap is six hours, even though the CEM was down for a total of ten hours. If the missing data gap continues past the time when the unit restarts, hours on both sides of the unit down time are part of one single missing data period.

When emissions occur during a partial unit operating hour, the values collected for that hour are included in missing data substitution algorithms (including the availability calculation) as if the hour were a full quality-assured monitor operating hour. The partial operating hour will also be treated as a full hour in load bins and in the missing data algorithm of the average of the hour before and hour after.

VII. **100 LEVEL RECORD TYPES**

A. **RT 100: Facility Identification**

Report RT 100 once as the first record in each quarterly report. This record identifies the facility represented by the data in the file.

Field Descriptions and Instructions

Facility or ORISPL Number: Enter the ORISPL code or alternative Facility ID for the facility. The number should be right justified and padded to the left with leading zero's. The ORISPL code is the same as the DOE plant or facility code. If you do not have an ORISPL code for a particular facility, contact EPA's Acid Rain Division or your State regulatory agency to obtain an alternate facility ID.

Calendar Quarter Data Contained in Report: For a quarterly report submission enter the calendar quarter represented by the data (1 - 4). In a file containing only monitoring plan or certification test data enter the quarter associated with the date of submission.

Calendar Year Data Contained in Report: For a quarterly report submission enter the calendar year represented by the data. In a file containing only monitoring plan or certification test data enter the calendar year associated with the submission.

EDR Version: Identify the EDR version number used for the report (i.e., V1.3, V1.3B, V2.0, etc.). If this field is blank, EPA will assume that the EDR Version is Version 1.3 or Version 1.3A (with electronic certifications).

B. **RT 101: Record Types Submitted**

RTs 101 are optional records which indicate the record types included in the file for each unit, stack or pipe. For detailed instructions on the use of these records, consult

pages 3-30 through 3-33 in the ***Acid Rain CEMS Program Submission Instructions*** (May 12, 1995).

C. **RT 102: Facility Location and Identification Information**

For each facility at which a NO_x budget unit is located, submit one and only one RT 102 in each quarterly report. This record contains information which identifies the facility and its location.

Field Descriptions and Instructions

Plant Name. Enter the name of the facility, as it appears in NADB (for Part 75 units) or the State's NO_x Budget Program Allowance Allocation List. If a non-Part 75 unit is located at the same facility as a Part 75 unit, use the facility name as it appears in the NADB. The facility name must be the same for sources that are affected by both the Acid Rain Program and the NO_x Budget Program.

Facility ID. Enter the EPA cross-media Facility ID (used for TRIS and other federal programs). This identifier is 12 characters. Contact your EPA Regional Office if you do not know this identifier. If your EPA Regional Office cannot provide this ID, leave the field blank.

EPA AIRS Facility System (AFS) ID. Enter the 10 digit AIRS AFS ID for your facility. The first two digits of this ID are the State code, the next three are the FIPS county code and the last five are the AFS plant ID. Contact your EPA Regional Office if you do not know this identifier. If your EPA Regional Office cannot provide this ID, leave the field blank.

State Facility ID. Provide the State ID required by the applicable State regulatory agency. Each State will provide specific instructions about the content of this field or about locating the ID.

Source Category/Type. Enter a description of the type of facility. If applicable, use the following descriptions:

Electric Utility
Cogeneration Unit
Petroleum Refinery
Industrial Boiler
Industrial Turbine
Iron & Steel Product
Pulp & Paper Mill
Municipal Waste Comb
Small Power Producer

If a unit does not fit one of these categories, contact your State regulatory agency to agree on an appropriate description.

Primary SIC Code. Enter the primary Standard Industrial Classification code for the plant (for example, 4911 for electric utilities).

State Postal Abbreviation. Enter the two-character postal abbreviation for the State in which the facility is located.

County Code (FIPS). Enter the three-digit federal county code for the county in which the facility is located.

Latitude. Enter the coordinates representing the facility location.

Longitude. Enter the coordinates representing the facility location.

VIII. MONITORING PLAN RECORD TYPES

You must submit a complete set of monitoring plan records as part of your initial monitoring plan submission, with the certification application and in each quarterly report file. The following instructions describe each record type which must be included in an EDR monitoring plan file.

A. RT 502: Unit Definition

This record type may be used only by Part 75 NO_x budget units prior to January 1, 2000. Non-Part 75 NO_x budget units must submit RTs 504, 505, 585, 586 and 587, as appropriate.

B. RT 503: Stack/Pipe Definition

Type of Stacks and Pipes

Common Stacks. A common stack defines a group of units served by the same stack. For a common stack you must assign a common stack ID beginning with the prefix "CS" followed by up to four additional characters or numbers. Submit RT 503 for each unit associated with the stack.

For example, if units 1 and 2 share a common stack CS001, submit two RTs 503: one defining the relationship between stack CS001 and unit 1, and the other defining the relationship between stack CS001 and unit 2.

Common Pipes. A common pipe defines a group of units served by a common fuel source or pipe header. For a common pipe or fuel source you must assign a pipe ID beginning with the prefix "CP" followed by up to four additional characters or numbers.

Multiple Ducts, Stacks or Pipes. A multiple stack defines two or more ducts or stacks in which CEMS are located for a single unit; it also defines any additional monitoring location(s) for a single unit which is also monitored at a common stack or common pipe. If a unit has a CEMS located in more than one duct or stack from the unit or other measurement device at a second location, assign a multiple stack ID to each monitoring location. You must assign a stack ID beginning with the prefix "MS" followed by up to four additional characters. Submit RTs 503 for each multiple stack associated with a unit.

For example, if unit 3 has two ducts, ducts MS3A and MS3B, two RTs 503 should be submitted: one defining the relationship between ducts MS3A and unit 3, and the other defining the relationship between duct MS3B and unit 3.

If a unit measures gas flow at a common pipe shared with other units and oil flow installed for the unit only, designate the oil fuel flowmeter location for the unit as a "multiple pipe." Submit RTs 503 for each multiple pipe associated with a unit.

Field Descriptions and Instructions

Stack/Pipe ID: Must begin with "CS," "CP," "MS," or "MP." Always left justify this field.

Stack/Pipe Description or Name: Provide any name, but it must be the same for all records associated with a unique stack or pipe ID.

Unit ID for Associated Unit: To identify units in the stack or pipe relationship, use the Unit ID in the NO_x Budget Program baseline inventory, or as required for NO_x Budget Program allowance tracking purposes. The Unit ID should be consistent for all submissions that are made to meet the requirements of the Acid Rain Program and the NO_x Budget Program. This Unit ID should be left justified beginning at column 30.

Activation Date. For a stack or pipe existing prior to the program participation date for the NO_x Budget Program report either the actual installation or operational date for the stack or the effective date for data reporting (for example, July 1, 1998). For a stack which becomes operational after the program participation date, report the actual date on which the stack or pipe is first used.

Retirement Date. Report the actual date of the last day on which the stack or pipe was last used for emissions purposes. Do not report estimated dates in this field. For active stacks or pipes, leave the retirement date blank.

Bypass Stack Flag. Enter "B" for any stack which is a bypass stack; leave blank for all non-bypass stacks. Leave blank for all pipes.

C. **RT 504: Unit Information:**

Provide one RT 504 for each unit in the file. Do not provide RT 504 with a stack or pipe ID; this is a unit-specific record type.

Field Descriptions and Instructions

Short name. Enter the common name that the utility uses for the unit (for example, Unit #1).

Boiler Type(s). Identify the type of boiler or combustion unit using the following upper case codes:

Boilers

AF	Arch-fired boiler
C	Cyclone boiler
CB	Cell burner boiler
CFB	Circulating fluidized bed boiler
DB	Dry bottom wall-fired boiler
DTF	Dry bottom turbo-fired boiler
DVF	Dry bottom vertically-fired boiler
OB	Other boiler
S	Stoker
T	Tangentially-fired
WBF	Wet bottom wall-fired boiler
WBT	Wet bottom turbo-fired boiler
WVF	Wet bottom vertically-fired boiler

Turbines

CC	Combined cycle
CT	Combustion turbine
OT	Other turbine

Maximum Hourly Heat Input Capacity. Enter the design heat input capacity for the unit. If the unit has been derated, enter the derated hourly heat input value. For combined cycle units, this value should reflect the maximum heat input of the unit and the supplemental duct burner, combined.

Date of First Commercial Operation. Enter the date on which the unit first operated for commercial purposes. If this date preceded the NO_x Budget Program, you may provide an approximate date. If this is a new unit which began operation after July 1, 1998, enter the actual date on which the unit became operational. If the unit has not yet become commercially operational, leave the date blank.

Unit Retirement Date. Enter the date on which the unit permanently ceased operation and "retired" from the NO_x Budget Program. If the unit has not retired, leave this field blank.

D. **RT 505: Program Indicator**

Submit at least one RT 505 for each unit represented in the file. This record type identifies the unit and the regulatory program for which the file has been submitted. Do not submit RT 505 for regulatory programs which apply to the unit but which are not relevant to the submission. If data from a unit is submitted to meet the requirements of more than one program, submit one RT 505 for each program. Order the records alphabetically by Unit ID and program code.

Field Descriptions and Instructions

Program. Enter one code in upper case to indicate the program for the unit. If more than one program code applies, report the second code in a second RT 505 for the unit. The applicable codes are:

ARP	Acid Rain Program
NBP	NO_x Budget Program
SIP	State Implementation Plan (other than NO_x Budget Program)
OTHER	Other Regulations

Unit Classification. Identify the classification of the unit for the program, using one of the following codes:

Acid Rain Program

P1	Phase I Unit
P2	Phase II Unit
OP	Opt-In Unit
RE	Retired Unit
NA	Non-Affected Unit

NO_x Budget Program

B	Budget Unit
NB	Non-Budget Unit: a non-budget unit is a unit which is not subject to the requirements of the NO_x Budget Program but for which monitoring plan information must be submitted because the unit shares a common stack or pipe with a NO_x budget unit at which emissions are measured.
OP	Opt-in Unit: an opt-in unit is a unit which elects to participate in the NO_x Budget Program.
RE	Retired Unit: a retired unit is a unit which has formally and permanently ceased operation and is not subject to the emissions monitoring requirements of the program.

Reporting Frequency. Enter one of the following codes to indicate the frequency on which you submit reports for the unit:

OS	Ozone Season Reporting (second and third quarter)
Q	Quarterly Reporting (four quarters)

In general, for the NO_x Budget Program for units using CEMS-based methodologies, reports are submitted for all four quarters. For units using non-CEMS-based methodologies, reports are submitted only for two quarters, covering ozone season hours.

Program Participation Date. Enter the initial date on which a unit is subject to the emissions reporting requirements of the program.

State Regulation Code. Enter a code for the State regulation under which the report is required. States will provide guidance on the appropriate codes for each State and regulation. Leave this field blank for all federal program requirements.

Regulatory Agency Code. Enter the four character code or abbreviation for the State or local air pollution agency which has regulatory responsibility for the unit.

E. **RT 507: Fuel Usage Data**

Peaking Units

For any year in which a unit qualifies as a peaking unit (as defined in 40 CFR Part 72) for any regulatory purpose (i.e., either for the selection of monitoring methodology, duration of certification tests, or frequency of on-going QA/QC activities), if available, submit RT 507 documenting the capacity of the unit during a three year period. Provide three years of historical capacity information; use projected data only if the historical information is not available because the unit has not operated. Calculate the three year average annual capacity by averaging the percent capacity for the three years of data provided. For example, if a unit has operated for two years at 6% and 12% capacity, report these values in columns 19 and 29 respectively. Report one year of projected capacity (for example 10%) in column 39. Report the average of these three values rounded to one decimal place in column 44 (9.3%).

Update the record and report in the first quarterly report submitted each year. Do not update after the first submission, but continue to report RT 507 in each quarterly report for the year.

Field Descriptions and Instructions

Calendar Year. Enter the current year (this is the year for which peaking unit capacity data is provided to qualify for a regulatory exception from a requirement).

Years 1 - 3: % Capacity. If historical data is available for any three prior years, enter the capacity as a percentage of total capacity for each year. If historical data is not available for three years, enter projected values for one or more years.

Years 1 - 3: Enter the calendar year represented by Year 1, etc.

Years 1 - 3 Type: Enter "A" to indicate that the data for the year is actual capacity; enter "P" to indicate projected capacity.

Three Year Average Annual Capacity: Enter the average % capacity for the three years.

Type of Qualification: Report "PK" to identify the data submitted as peaking unit capacity.

F. **RT 510: Monitoring Systems Definition**

(1) **Defining a Monitoring System**

For CEMS methodologies, a monitoring system is any combination of analytical components, sensors and data software components for which a relative accuracy is specified (i.e., flow monitor, NO_x-diluent monitoring system, NO_x concentration system, CO_2 concentration system, moisture system, or alternative heat input system). For monitoring methodologies based on fuel flow metering, a monitoring system consists of the fuel flow meter component(s) and the software component(s) needed to calculate and report hourly fuel flow for a unit or common pipe for a particular fuel. A monitoring system for a parametric method consists of the components used to monitor designated parameters and the software component need to interpret these parameters for emissions estimation.

Monitoring systems are comprised of the actual, physical components which are installed or will be installed for a unit.

- **Parameter**. Each monitoring system measures a specific pollutant or parameter (for example, NO_x emission rate) or provides a value necessary for calculating emissions (for example, pollutant concentration, stack flow, moisture, mass oil flow or heat input). The pollutant measured or value provided by a system is referred to in these instructions as the "Parameter."

- **Hardware Components.** Most monitoring systems include one or more monitoring or measurement hardware components. Primary analytical component(s) should always be included.

- **Software Components**. Identify the software component(s) of the Data Acquisition and Handling System (DAHS) for each monitoring system. Any software program which is subject to DAHS verification requirements (i.e., which calculate emissions or heat input, implements missing data substitution algorithms or quarterly reporting functions) should be included as a DAHS software component in all relevant systems. Identify the programmable logic controller (PLC) or automated data logger (DL) as a system component if it performs any of those functions.

(2) **Types of Systems**

The following types of systems may be defined and used for the Acid Rain Program and/or the NO_x Budget Program.

- NO_x Emission Rate System: This monitoring system is used to determine NO_x emission rate in lb/mmBtu. It is comprised of a NO_x concentration monitor, CO_2 or O_2 diluent monitor and DAHS software.

- NO_x Part 75 Alternative Monitoring System (AMS): This monitoring system is used to determine NO_x emission rate in lb/mmBtu. It is comprised of components defined in the petition approved as meeting the requirements of Subpart E of Part 75.

- NO_x Concentration System: This monitoring system is used to determine NO_x concentration, and is used in conjunction with a separately certified flow monitoring system to calculate NO_x mass emissions. It is comprised of a NO_x concentration monitor and DAHS software. This type of system is used by non-Part 75 NO_x budget units only.

- Appendix E NO_x System: This monitoring system is used to determine NO_x emission rate in lb/mmBtu from hourly heat input and the NO_x emission rate from a NO_x/heat input correlation curve. The system is comprised of only DAHS software.

- Flow Monitoring System: This monitoring system is used to measure stack flow rate in standard cubic feet per hour (scfh). The flow rate is used to calculate heat input or NO_x mass emissions. The system is comprised of, at a minimum, a flow monitor and DAHS software. For ultrasonic flow monitors, identify a single component as representative of the control panel and both the upstream and downstream transducers.

  If the average of two or more flow monitors will be used to determine the hourly flow value, identify each separate flow monitor as a component in the primary flow system. If each monitor alone will be used as a redundant backup flow system, define each redundant backup system containing the single flow monitor. For example, a utility may install flow monitors Component A and Component B on a single stack. If the average value from Components A and B will be reported as the hourly flow value, then the primary flow system ("P01") would include both Component A and Component B along with the DAHS. You may also create redundant backup flow system ("B01") consisting of Component A and the DAHS and redundant backup system ("B02") consisting of Component B and the DAHS. Note that any redundant backup monitoring system must meet the initial certification and ongoing quality assurance requirements for a redundant backup monitoring system.

- CO_2 or O_2 System: This monitoring system is used to measure percent CO_2 or O_2 for the calculation of hourly heat input, if an analyzer other than the diluent component of the NO_x emission rate system is used. It is comprised of a CO_2 or O_2 analyzer and DAHS software.

- Moisture System: This system is used to measure hourly percent moisture for the calculation of hourly heat input, NO_x emission rate or NO_x mass emissions, if an hourly moisture adjustment is required. A moisture system is comprised of a moisture sensor and DAHS software or one or more dry and wet basis oxygen analyzers and DAHS software. One of these oxygen analyzers may also be a component of the NO_x emission rate system described above.

- Heat Input System: This system measures heat input based on facility-specific and approved alternative heat input methodologies (such as boiler efficiency testing). It is comprised of DAHS software and any other components required in an approved petition. (A heat input system should not be defined if heat input is determined using a flow monitoring system and diluent monitor or if it is determined using Appendix D Methodologies.)

- **!** Long Term Gas System or Long Term Oil System: These monitoring systems measure fuel flow during the ozone season on a long term (non-hourly) basis. The systems are comprised of DAHS software and the billing fuel flowmeters or other relevant components. These systems are used in conjunction with a default NO_x emission rate.

- **!** GAS System: This monitoring system measures gas flow in 100 standard cubic feet per hour. Gas flow is used to calculate heat input. This system is comprised of, at a minimum, a gas fuel flow meter and DAHS software.

- **!** OILV System: This monitoring system measures hourly volumetric oil flow rate. It is comprised of, at a minimum, an oil fuel flow meter and DAHS software.

- **!** OILM System: This monitoring system measures hourly mass of oil combusted in pounds per hour. This value is used to calculate heat input. It is comprised of, at a minimum, an oil fuel flow meter and DAHS software.

(3) **Additional Information for OIL and GAS Systems**

Each oil or gas system should include at least one fuel flowmeter hardware component. You may include multiple hardware components (for example sensors and transmitters), but the simplest possible representation of the fuel flowmeter (i.e., one component to represent each fuel flowmeter) is recommended. Each oil and gas system must also include a DAHS component to record and calculate fuel flow, heat input and perform missing data substitution.

The oil or gas system for the unit or common pipe must include all fuel flowmeters which are necessary to determine "net" fuel flow for one fuel type for the unit or common pipe. For example, if oil is measured by using one flowmeter for the main fuel source and subtracting the value measured by the flowmeter measuring the return fuel, the system should include both the main and return flowmeters as separate components of the same system. If there are multiple sources of the same fuel which are metered separately (not including ignitor fuel used during start-up) include the flowmeter(s) measuring each source of fuel as separate components of the same system. Define a second system for oil if a different type of oil is burned as supplemental fuel during start up.

Do not include components associated with oil or gas sampling methodologies, unless you are using a gas chromatograph to determine the heat content of gas on an hourly basis. For a gas chromatograph, include it as a component in each GAS system for which it is providing hourly readings.

(4) **Rotation of Fuel Flow Meters for Certification Purposes**

If you maintain a group of similar fuel flowmeters for a facility or utility and rotate installation at different units to facilitate annual accuracy tests, include each of the fuel flowmeters as separate components of the fuel flow system in RTs 510 for each unit or pipe. Identify all of the possible fuel flowmeters by manufacturer, model and serial number. At any given time, EPA will assume that one (or more) of the fuel flow meters listed in the plan is installed and operating at the unit or pipe. Do not install a fuel flow meter which is not included as part of a monitoring system in the unit's monitoring plan. There is no limit on

the number of fuel flowmeters which can be included in a system for a unit or pipe or the number of units which can be part of a rotational schedule.

For example, at Unit 1, OILV system 100 might include eight fuel flowmeters, 001 - 008 each of which are Turbine meters of the same make and model. However, each fuel flowmeter has a unique serial number. At Unit 2, there is an OILV system 100 which includes the same list of eight fuel flowmeters. For the first quarter of 1997, components 001 and 002 are installed at Unit 1 as the main supply and return OFFMs; at Unit 2 components 003 and 004 are installed. In December 1997, the utility removes components 001 and 002 from Unit 1 to perform laboratory accuracy tests and installs components 005 and 006 in their place. At Unit 2, components 003 and 004 are removed and replaced by components 007 and 008. Following calibration, components 001 through 004 are warehoused and used as replacements for the following year. This approach allows the utility to remove the instruments and perform accuracy tests with minimal loss of data and without making any changes to the monitoring plan for these units.

In the formulas reported in RT 520 to calculate heat input, SO_2 and CO_2 emissions, reference the monitoring system ID and a representative fuel flow meter component ID. It is not necessary to change formula references when the actual components are switched.

Field Definitions and Instructions

Monitoring System ID. Assign unique three-character alpha-numeric IDs to each monitoring system at a stack, pipe or unit. Do not repeat a system ID number for a different system.

Component ID. Assign unique three-character alpha-numeric IDs to each component at a stack, pipe or unit. Do not repeat a component ID for different components at the same unit, pipe or stack, even if they are associated with different monitoring systems. If a component is part of two or more systems, list the component in each system using the same unique component ID you have assigned to it. For example, a NO_x monitor could be listed as a component in the NO_x emissions rate system and as a component in a backup NO_x concentration system. Each time it is listed, the NO_x monitor would have the same component ID. Do not reuse a component ID when the component is retired or no longer in use.

If you have DAHS software that is installed on one computer that processes data from multiple hardware components, assign that DAHS installation a single component ID and include it as a component of each monitoring system with which it is associated. If you have the same type of software installed on separate computers or processors, assign a unique component identification number (and serial number) to each installation.

If a single dual range analyzer is used for both high and low scale measurements, define the high scale and low scale as separate components in the system and submit two component records with different component IDs (and the same system ID).

Status. Enter (A) for adding a new entry, (C) for correcting a previous entry, (D) for deleting a previous entry, or (U) for resubmitting an unchanged entry.

For the initial submission, this column will include only "A"s. For all deletions reenter all information to be deleted and enter "D" in the status column.

System Parameter Monitored. Enter one of the following codes in upper case to indicate the pollutant or parameter measured by the system. This code should be identical for each component associated with a unique system ID.

CO2	CO_2 Concentration System
FLOW	Stack Flow System
GAS	GAS System
H2O	Moisture System
HI	Alternative Heat Input System (NBP only)
LTGS	Long Term Gas Fuel Flow System
LTOL	Long Term Oil Fuel Flow System
NOX	NO_x Emission Rate System
NOXC	NO_x Concentration System (NBP only)
O2	O_2 Concentration System (NBP only)
OILV	Volumetric Oil Flow System
OILM	Mass Oil System
SO2	SO_2 System (ARP only)
SO2R	SO_2 Emission Rate System (ARP only)

Please note that the system parameter for a diluent component in a NO_x emission rate system is "NOX," not "CO2" or "O2."

Primary/Backup Designation. Enter one of the following codes in upper case for each component in the monitoring system.

P	Primary
RB	Redundant Backup. A redundant backup (RB) monitoring system is operated and maintained by meeting all the QA/QC requirements of the NO_x Budget Program.
B	Backup. A backup system (B) is a "cold" backup or portable monitoring system.
DB	Data Backup. A data backup system is comprised of the analytical components contained in the primary monitoring system, but includes a backup DAHS component.
RM	Reference Method Backup. A reference method (RM) monitoring system is a monitoring system which is operated as a reference method pursuant to the requirements of Appendix A of Part 60.

Except for fuel flow monitoring systems, a system should not contain any components that are not used when the system is being used to monitor and report data. For example, do not include "backup" DAHS software as an additional DAHS component of a primary system. If you have defined

primary NO_x Concentration (Parameter = NOXC) System 101, consisting of a NO_x concentration monitor (component ID N01) and a DAHS software installation (component ID D01), if you also have a second installation of that DAHS software, you should define a Data Backup NOXC System 102 consisting of the same NO_x concentration monitor (component N01) and the second DAHS installation, defined as component D02.

Component Type. This field indicates the function of the particular component, not the value reported by the system as a whole. For example, each system will have at least one component which is type "DAHS," and a NO_x Emission Rate CEM system will include a diluent component which is either type "CO2" or type "O2." Enter one of the following upper case codes for component type:

For CEMS Systems:

SO2	SO_2 Concentration (Single Scale or Range)
SO2H	High Scale SO_2 Concentration
SO2L	Low Scale SO_2 Concentration
CO2	CO_2 Concentration (Single Scale or Range)
CO2H	High Scale CO_2 Concentration
CO2L	Low Scale CO_2 Concentration
FLOW	Stack Flow Analyzer
H2O	Percent Moisture
NOX	NO_x Concentration (Single Scale or Range)
NOXH	High Scale NO_x Concentration
NOXL	Low Scale NO_x Concentration
O2D	O_2 Concentration-dry measurement (Single Scale or Range)
O2DH	High Scale O_2 Concentration-dry measurement
O2DL	Low Scale O_2 Concentration-dry measurement
O2W	O_2 Concentration-wet measurement (Single Scale or Range)
O2WH	High Scale O_2 Concentration-wet measurement
O2WL	Low Scale O_2 Concentration-wet measurement
PRB	Probe

For OILV or OILM Systems:

DP	Differential Pressure Gauge
OFFM	Oil Fuel Flowmeter

For GAS Systems:

DP	Differential Pressure Gauge
FLC	Flow Computer
GCH	Gas Chromatograph
GFFM	Gas Fuel Flowmeter
PRES	Pressure Gauge
TEMP	Thermostat

For All Types of Systems:

DAHS	Data Acquisition and Handling System
DL	Data Logger or Recorder
PLC	Programmable Logic Controller

Sample Acquisition Method. Enter the appropriate concentration/diluent codes, operational principle (volumetric flow codes) or type of fuel flowmeter (fuel flowmeter type codes). If a sample acquisition method is not applicable (e.g., for a DAHS component), leave the entry blank. If you enter "O" (Other) to identify the method or principle, submit a brief description of the method with the monitoring plan. You may use RTs 910 for this purpose. Clearly identify the information with the system ID (Column 2) and component ID (Column 6).

Enter one of the following upper case codes:

For CEMS:

DIL	Dilution
DIN	Dilution in Stack
DOU	Dilution Out-of-Stack
EXT	Dry Extractive
IS	In Situ
ISP	Point/Path in Situ
ISC	Cross Stack in Situ
O	Other
WXT	Wet Extractive

For Volumetric Stack Flow CEMS:

DP	Differential Pressure
O	Other
T	Thermal
U	Ultrasonic

For Fuel Flowmeters Types:

COR	Coreolis
NOZ	Nozzle
O	Other
ORF	Orifice
PDP	Positive Displacement
TUR	Turbine
U	Ultrasonic
VEN	Venturi
VTX	Vortex

Manufacturer. Enter the name or commonly used acronym for the manufacturer or developer of the component. This field is limited to 20

characters. Do not use this field to identify the unit or location of the component.

If you have developed software in-house, use an abbreviation which clearly identifies the utility or operating company responsible for the software development. Use the same abbreviation or name for all units and sources using the software.

Model. Enter the model of any hardware component or the version number of a software component. This field is limited to 15 characters.

Serial Number. Enter the serial number for each component. For hardware or analytical components the serial number should be unique and should allow identification of the instrument or device in the field. Serial numbers are optional for DAHS software components. If you choose to assign one, it must be unique to the software installation. The field is limited to 20 characters.

For upstream/downstream ultrasonic flow monitors, provide a single component serial number for the instrument pair. For thermal flow monitors, provide a single serial number which represents the set of thermal sensors installed as part of the system.

(5) **Changing System Definitions and Recertification Events**

If you must make any changes to key data fields and/or add, change or delete key components of a system after that system has been provisionally certified and used to report emissions, it is very likely that this indicates the need to do recertification testing. If it is necessary to make any such changes and you are unsure of what testing or other requirements may be associated with that change, you should consult with your state agency.

If you retire or permanently inactivate a system, you must submit RT 511. Do not submit data from this system after the reported inactivation date.

G. **RT 511: Monitoring System Certification Status**

For each monitoring system report a record identifying the date and hour of key certification events. Submit these records in the appropriate quarterly report or other EDR submission.

Field Descriptions and Instructions

Event Code. Enter one of the following upper case codes:

PVC	Initial Provisional Certification
RET	Permanent Retirement

Additional codes may be required by State regulatory agencies.

Provisional certification is the date on which initial certification occurs and the system is eligible to report data for NO_x Budget Program purposes. This is the date and hour on which the last test for certification is successfully completed. This date is not changed or affected by recertification events, recertification tests or ongoing quality assurance tests.

Status/Event Date and Hour. Report the date and hour in which the status of the monitoring system changed or became effective.

Other Descriptive Information. If you need to provide additional information about a monitor to describe the system certification status, do so in the 910 records.

H. **RT 520: Emissions Formulas**

In RT 520, provide the formulas that will be used to calculate required data from primary monitoring systems defined in RT 510. It is not necessary to define formulas referencing backup monitoring systems if the backup monitoring system(s) measure on the same monitor basis for the same parameter and therefore would use the same formulas as the primary system.

States use Table C formulas for three primary purposes:

- To verify that the formulas selected are appropriate to the monitoring approach and reflect a thorough understanding of emissions calculations and the use of appropriate variables.

- To provide the basis for formula verification to ensure that the DAHS software calculates emissions and selected values accurately.

- To verify hourly calculations in quarterly emission reports. To facilitate the use of formulas in NETS, it is necessary for companies to provide formulas in clear, simple and consistent formats.

(1) **Required Formulas for the NO_x Budget Program**

The following formulas should be submitted if the monitoring methodology for which they are appropriate is used.

- **For All Methodologies:**

  -- NO_x mass emissions

- **For CEMS Based Methodologies:**

  -- NO_x emission rate
  -- Heat input
  -- F-factor proration calculation for mixed fuels (if elected)
  -- Flow-weighted or heat input-weighted NO_x emission rate formulas for multiple stacks using two primary NO_x systems
  -- Moisture formulas for moisture systems containing two or more components

-- Flow formulas for all flow systems containing two flow monitors

! **For Fuel Flow Based Methodologies:**

-- Heat input
-- Mass of oil formulas for OILV measurements
-- Net fuel flow formulas
-- Long term fuel flow apportionment formulas

Do not provide formulas representing the default heat output or NO_x emission rate for a unit or stack or quarterly or seasonal summation formulas.

(2) **Referencing Other Formulas**

In certain circumstances a value that is used in one formula is actually derived from another formula. The use of pro-rated F-factors (described below) is an example. This value should be represented in the formula by the ID number of the formula from which it is derived. Any intermediate-level formula that is referred to in another formula must also be included in RTs 520.

Whenever you create a formula based on an equation defined in 40 CFR Part 75, Appendices D through G, or 40 CFR Part 60, Appendix A, Method 19, replace each variable in the equation with a reference to a single constant, primary component/system ID, or formula ID (unless it represents a value obtained from an independent source, such as through fuel sampling and analysis). If you need to represent a single variable as a mathematical expression, create a separate formula for that expression, and then refer to that expression in the original formula by this second formula's ID.

Example 1: If you determine flow by using two flow monitors to calculate an average flow value, you should create a separate formula to calculate the average flow value, and then refer to this formula ID in the emissions formulas that require a flow value.

Example 2: If you determine fuel flow by using two flowmeters, one that measures the flow of fuel from the fuel source and one that measures the return flow, create a separate formula that calculates the flow of the fuel consumed (by subtracting the return flow from the source flow.) Refer to this formula ID in the formulas for heat input.

Example 3: If you need to measure moisture but do not use a moisture sensor to determine this value directly, you will have to calculate moisture. In this case, create a separate formula for calculating moisture, and then refer to this formula ID in the emissions formulas that require the moisture value.

(3) **F-factors and F-factor Formulas**

Heat input and NO_x emission rate formulas based on CEMS require the inclusion of a specific F-factor based on the fuel being combusted. Unless you provide and use an F-factor proration formula, provide fuel and F-factor specific formulas for each fuel that will be combusted at the affected unit or stack. If a combination of fuels may be combusted within any given hourly period, two options for calculating emissions are available: (1) use the

highest F-factor, or (2) use a pro-rated F-factor. Calculate pro-rated F-factors using the appropriate formulas in 40 CFR Part 75, Appendix F (see Example (2) below). If a pro-rated F-factor formula is used, include it in RTs 520.

See Table 2 below for a summary of the standard F-factors used in formulas to calculate NO_x emission rate or heat input.

Field Definitions and Instructions

Formula ID. Assign a unique three character formula ID for each formula defined at a unit, stack or pipe. If a facility includes a common stack, pipe header, or multiple stack, assign unique formula IDs across all related units and stacks.

Do not reuse formula IDs if you have changed component types (e.g., from dry extractive to wet dilution systems) and therefore change the type of formula in use. EPA relies on the accuracy of the formula code to verify hourly emissions calculations.

Submission Status. Enter an "A" for a new formula, "U" for an unchanged formula or a "D" for an inactive or deleted formula.

Parameter Code. Enter the parameter representing the pollutant or parameter calculated by the formula. Use the following upper case codes:

FC	Carbon Based F-Factor
FD	Dry F-Factor
FGAS	Net Gas Flow to Unit/Pipe
FLOW	Net Stack Flow
FOIL	Net Oil Flow to Unit/Pipe
FW	Wet F-Factor
H2O	Percent Moisture
HI	Heat Input
HGAS	Hourly Gas Flow Apportioned from Long Term Measurement
HMOF	Hourly Mass of Oil Apportioned from Long Term Measurement
HVOF	Hourly Volume of Oil Apportioned from Long Term Measurement
NOX	NO_x Emission Rate
NOXM	NO_x Mass Emissions
OILM	Mass of Oil

Formula Code. Enter the formula code of the formula that appears in Tables 2 through 8 and in 40 CFR Part 75, Appendices D through G (or, if appropriate, in 40 CFR Part 60, Appendix A, Method 19) that is applicable to the parameter and the types of monitoring components. Note that all formulas codes must be entered exactly as they are presented, this includes the use of dashes and capital letters.

For example, enter "N-1" if you are using the equation for converting measurements of NO_x concentration and flow rate on a wet basis to NO_x in lb/hr. Enter "F-5" if you are using the equation from Method 19, Appendix A, 40 CFR Part 60 for converting measurements of NO_x concentration and O_2 diluent on a dry basis to NO_x in lb/mmBtu.

Tables 3 through 6 provide a summary of the primary formulas used to calculate NO_x emissions and heat input using CEMS and fuel flowmeter methodologies.

TABLE 2

F-factor Reference Table

F-factor is the ratio of the gas volume of all the products of combustion (less water) to the heat content of the fuel. F_c-factor is the ratio of the gas volume of the CO_2 generated to the heat content of the fuel (see Part 75, Appendix F, Section 3.3).

Option 1: Fuel-Based Constants

Fuel		F-factor (dscf/mmBtu)	F_c-factor (scf CO_2/mmBtu)
Coal	Anthracite	10,100	1,970
	Bituminous (or Sub-bituminous)	9,780	1,800
	Lignite	9,860	1,910
Oil		9,190	1,420
Gas	Natural Gas	8,710	1,040
	Propane	8,710	1,190
	Butane	8,710	1,250
Wood	Bark	9,600	1,920
	Wood Residue	9,240	1,830

Option 2: Replacement Formulas

Code	Formula	Where:
F-7A	$F = \frac{3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O)}{GCV} \times 10^6$	F = Dry-basis F-factor (dscf/mmBtu) F_c = Carbon-based F-factor (scf CO_2/mmBtu) %H, %N, %S, %C, %O = Content of element, percent by weight, as determined on the same basis as the gross calorific value by ultimate analysis of the fuel combusted using ASTM D3176-89 for solid fuels, ASTM D1945-91 or ASTM D1946-90 for gaseous fuels, as applicable GCV = Gross calorific value (Btu/lb) of fuel combusted determined by ASTM D2015-91 for solid and liquid fuels or ASTM D1826-88 for gaseous fuels, as applicable
F-7B	$F_c = \frac{321 \times 10^3 \times (\%C)}{GCV}$	
F-8*	$F = \sum_{i=1}^{n} X_i F_i$	n = Number of fuels being combusted F_i,$(F_c)_i$ = Applicable F or F_c factor for each fuel type X_i = Fraction of total heat input derived from each type of fossil fuel
	$F_c = \sum_{i=1}^{n} X_i (F_c)_i$	

* This formula should be used for affected units that combust combinations of fossil fuels or fossil fuels and wood residue. For affected units that combust a combination of fossil and non-fossil fuels, the selected F-factor must receive State approval.

TABLE 3

NO_x EMISSION RATE FORMULAS (LB/MMBTU)

Code	Formula	Where:
E-3	$E = K \times C_d \times F_d \times \frac{20.9}{20.9 - \%O_2}$	E = NO_x emission rate, lb/mmBtu K = 1.194×10^{-7} (lb/dscf)/ppm NO_x C_d = NO_x concentration measured, dry basis, ppm C_w = NO_x concentration measured, wet basis, ppm F_d = Dry basis F-factor (dscf/mmBtu) 20.9 = Percentage of air that is oxygen, % $\%O_2$ = O_2 concentration as a percent of effluent gas, dry basis $\%H_2O$ = Moisture content of sample gas as measure by Appendix A, Method 4, of part 60 $\%O_{2w}$ = O_2 concentration as a percent of effluent gas, wet basis
E-4	$E = K \times C_w \times F_d \times \frac{20.9}{[(20.9/100)\ (100 - \%H_2O)\ -\ \%O_{2w}]}$	
19-1 (F-5)	$E = K \times C_d \times F_d \times \frac{20.9}{20.9 - \%O_{2_d}}$	Formulas should be multiplied by the conversion factor "K" (if C_d or C_w is in ppm). FROM — TO — MULTIPLY BY "K" ppm NO_x — lb/scf — **K = 1.194 X 10^{-7}** **Where:** *E* = Emission rate in lb/mmBtu C_d = Pollutant concentration measured on a dry basis, lb/scf (or ppm) C_w = Pollutant concentration measured on a wet basis, lb/scf (or ppm) F_d = Dry-basis F-factor (dscf/mmBtu) F_c = Carbon-based F-factor (scf CO_2/mmBtu) F_w = Wet-basis F-factor (wscf/mmBtu) B_{wa} = Moisture fraction of ambient air B_{ws} = Moisture fraction of effluent gas O_{2d} = Oxygen diluent concentration as percent of effluent gas measured on a dry basis O_{2w} = Oxygen diluent concentration as percent of effluent gas measured on a wet basis CO_{2d} = Carbon dioxide diluent concentration as percent of effluent gas measured on a dry basis CO_{2w} = Carbon dioxide diluent concentration as percent of effluent gas measured on a wet basis
19-2	$E = K \times C_w \times F_w \times \frac{20.9}{20.9 \times (1 - B_{wa}) - \%O_{2_w}}$	
19-3	$E = K \times C_w \times F_d \times \frac{20.9}{20.9 \times (1 - B_{ws}) - \%O_{2_w}}$	
19-4	$E = K \times \frac{(C_w \times F_d)/(1 - B_{ws})}{20.9/(20.9 - \%O_{2_d})}$	
19-5	$E = K \times C_d \times F_d \times \frac{20.9}{20.9 - \%O_{2_w}/(1 - B_{ws})}$	
19-6	$E = K \times C_d \times F_c \times \frac{100}{\%CO_{2_d}}$	
19-7 (F-6)	$E = K \times C_w \times F_c \times \frac{100}{\%CO_{2_w}}$	
19-8	$E = K \times \left[\frac{C_w \times F_c}{1 - B_{ws}}\right] \times \frac{100}{\%CO_{2_d}}$	
19-9		

TABLE 4

MOISTURE FORMULAS*		
Code	**Formula**	**Where**
M1	$\%H_2O = \frac{100\% \ (O_{2_d} \& O_{2_w})}{O_{2_d}}$	$\%H_2O$ = Percent Moisture O_{2_d} = oxygen diluent concentration as percent of effluent gas measured on a dry basis O_{2_w} = oxygen diluent concentration as percent of effluent gas measurde on a wet basis

* Please contact your State regulatory agency or EPA Acid Rain Division for the assigned a code for other moisture formulas.

TABLE 5

NO_X EMISSION RATE FORMULA REFERENCE TABLE									
Monitor Type		CEM (CO_2)				CEM (O_2)			
Moisture Basis	**NO_x**	DRY	DRY	WET	WET	DRY	DRY	WET	WET
	CO_2	DRY	WET	DRY	WET				
	O_2					DRY	WET	DRY	WET
Appropriate Hourly Formulas		19-6	19-9	19-8	19-7 (F-6)	19-1 (F-5)	19-5	19-4	19-2 or 19-3

TABLE 6

MONITORING PLAN: HEAT INPUT FORMULA REFERENCE TABLE									
Monitor Type		Flow Monitor (Wet) and Diluent CEM				Fuel Flow and Fuel Sampling			
						Combusting Oil		Combusting Gas	For Common Stack - Combusting Coal
Moisture Basis	**CO_2**	WET	DRY			MASS	VOL		
	O_2			WET	DRY				
Appropriate Formulas (Part 75, Appendix F)		F-15	F-16	F-17	F-18	F-19	F-19V	F-20	F-21

TABLE 7

HEAT INPUT FORMULAS		
Code	**Formula**	**Where:**
F-10B	$HI_{CS} = \frac{\sum_{u=1}^{p} HI_u \, t_u}{t_{CS}}$	HI_u = Heat input rate for a unit in mmBtu/hr HI_{CS} = Heat input rate at the common stack or pipe t_u = Operating time at a particular unit t_{CS} = Operating time at common stack
F-15	$HI = Q_w \times \frac{1}{F_c} \times \frac{\%CO_{2w}}{100}$	HI = Hourly heat input, mmBtu/hr Q_w, Q_h = Hourly average volumetric flow rate, wet basis, scfh F_c = Carbon-based F-factor, scf/mmBtu F = Dry basis F-factor dscf/mmBtu $\%CO_{2w}$ = Hourly concentration of CO_2, percent CO_2 wet basis $\%CO_{2d}$ = Hourly concentration of CO_2, percent CO_2 dry basis $\%O_{2w}$ = oxygen diluent concentration as percent of effluent gas measured on a dry basis $\%O_{2d}$ = oxygen diluent concentration as percent of effluent gas measurde on a wet basis $\%H_2O$ = Hourly average stack moisture content, percent
F-16	$HI = Q_h \times \left[\frac{100 - \%H_2O}{100F_c}\right]\left[\frac{\%CO_{2d}}{100}\right]$	
F-17	$HI = Q_w \times \frac{1}{F} \times \frac{[(20.9/100)(100 - \%H_2O) - \%O_{2w}]}{20.9}$	
F-18	$HI = Q_w \times \left[\frac{(100 - \%H_2O)}{100F}\right]\left[\frac{(20.9 - \%O_{2d})}{20.9}\right]$	
F-19	$HI_o = M_o \times \frac{GCV_o}{10^6}$	HI_o = Hourly heat input from oil, mmBtu/hr M_o = Mass of oil consumed per hour, lb., tons, or kg. GCV_o = Gross calorific value of oil, Btu/unit mass 10^6 = Conversion of Btu to mmBtu
F-19V	$HI_o = V_o \times \frac{GCV_v}{10^6}$	HI_o = Hourly heat input from oil, mmBtu/hr V_o = Volume of oil consumed per hour, gals. GCV_v = Gross calorific value of oil, Btu/gal. 10^6 = Conversion of Btu to mmBtu
F-20	$HI_g = Q_g \times \frac{GCV_g}{10^6}$	HI_g = Hourly heat input from natural gas, mmBtu/hour Q_g = Flow or amount of natural gas combusted per hour, 100 scf GCV_g = Gross calorific value of natural gas, Btu/100 scf

TABLE 7 (cont.)

HEAT INPUT FORMULAS (cont.)		
Code	**Formula**	**Where:**
F-20C	$HI_{Unit} = \frac{HI_1 \ t_1 + HI_2 \ t_2}{t_{Unit}}$	HI_{Unit} = Heat input rate for a unit (mmBtu/hr) HI_1 = Heat input rate for stack or duct 1 (mmBtu/hr) HI_2 = Heat input rate for stack or duct 2 (mmBtu/hr) t_{Unit} = Operating time for the unit t_1 = Operating time for stack or duct 1 t_2 = Operating time for stack or duct 2
F-21	$HI_c = M_c \times \frac{GCV_c}{500}$	HI_c = Daily heat input from coal, mmBtu/day M_c = Mass of coal consumed per day, tons GCV_c = Gross calorific value of coal sample, Btu/lb 500 = Conversion of Btu/lb to mmBtu/ton

TABLE 8

COMMON STACK HEAT INPUT APPORTIONMENT FORMULAS		
Code	**Formula**	**Where**
F-20A	$HI_i = HI_{CS}\left(\frac{t_{CS}}{t_i}\right)\left[\frac{MW_i \ t_i}{\sum_{i=1}^{n} MW_i \ t_i}\right]$	HI_i = Heat input rate for a unit in mmBtu/hr HI_{CS} = Heat input rate at the common stack or pipe MW_i = Gross electrical output in MWe t_i = Operating time at a particular unit t_{CS} = Operating time at common stack n = Total number of units using the common stack i = Designation of a particular unit
F-20B	$HI_i = HI_{CS}\left(\frac{t_{CS}}{t_i}\right)\left[\frac{SF_i \ t_i}{\sum_{i=1}^{n} SF_i \ t_i}\right]$	HI_i = Heat input rate for a unit in mmBtu/hr HI_{CS} = Heat input rate at the common stack or pipe SF = Gross steam load (flow) in lb/hr t_i = Operating time at a particular unit t_{CS} = Operating time at common stack n = Total number of units using the common stack i = Designation of a particular unit

TABLE 9

NO_x MASS EMISSIONS CALCULATIONS (POUNDS)		
Code	**Formula**	**Where:**
N-1	$M_{NOx_h} = K \times C_{h_w} \times Q_h \times t_h$	M_{NOx_h} = Hourly NO_x mass emissions (lbs) K = 1.194×10^{-7} for NO_x, (lb/scf)/ppm C_{h_d} = Hourly average, NO_x concentration, ppm (dry) C_{h_w} = Hourly average, NO_x concentration, stack moisture basis, ppm (wet) Q_h = Hourly average volumetric flow rate, scfh (wet) $\%H_2O$ = Hourly average stack moisture content, % by volume HI_h = Hourly heat input t_h = Unit/stack generating time for hours in hours or fraction of an hour E_h = Hourly NO_x emission rate in lb/mmBtu
N-2	$M_{NOx_h} = K \times C_{h_d} \times Q_h \times \frac{100 - \%H_2O}{100} \times t_h$	
F-10A	$M_{NOx_h} = E_h \times HI_h \times t_h$	

TABLE 10

STANDARD UNITS OF MEASUREMENT	
Parameter	**Units**
CO_2 and O_2 (as reported in Record Types 210 and 211)	percent
Flow (as reported in Record Type 220)	scfh
Gas Flow (as reported in RT 303)	100 scf/hr
Moisture (as reported in RT 212)	percent
Mass Oil Flow (as reported in RT 302)	lb/hr
NO_x concentration (as reported in RT 201)	ppm
Volumetric Oil Flow (as reported in RT 302)	scfh, gal/hr, m^3/hr, barrels/hr

Text-formatted Formula. Enter in this 200 character field a representation of the formula, replacing its variables with the appropriate references to monitoring systems, other formulas, and constants. Enter the formula in the order of calculation and with the constants as they appear in the Tables above and operators as they appear in Table 11, below. If necessary, use parentheses; do not use brackets.

- **Component/System References**. Refer to systems as "S#(001-002)" where 001-002 is the component-system ID from Table B.

This symbol represents the measurement value in the appropriate standard units of measurement for the parameter already adjusted for bias (if appropriate), temperature, and pressure. The following table lists the standard units of measurement assumed to be represented by each type of system.

- **Formula References**. Refer to other Formulas as "F#(001)" where 001 is the Formula ID for another formula in RTs 520.

- **Constants**. You must also include any constants, such as unit conversion factors, fuel factors, etc. that are required for the calculation. Do not perform any intermediate calculations on the constants; your formula should have the same format as the equation in 40 CFR Part 60 or Part 75 upon which it is based. Represent each constant as it is represented in Part 75 or Method 19. If your DAHS software uses other equivalent constants or performs the calculations in an order different from the regulations, demonstrate that these calculations are equivalent to those in RTs 520 as part of the formula verification required for certification.

TABLE 11

STANDARDIZED FORMULA ELEMENTS FOR ELECTRONIC REPORTING		
Operation, Symbol, or Variable	**Representation in Electronic Format**	**Example**
Addition	+	MW_1 + MW_2
Subtraction	-	100 - S#(001-001)
Multiplication	*	S#(001-001) * S#(002-001)
Division	/	100 / S#(001-001)
Exponential power	**	1.66 * 10 ** -7
Gross Electrical Output	MW_<unit>	MW_1
Gross Steam Load (Flow)	SF_<unit>	SF_1
Fraction of Heat Input from Fuel	X_<fuel>	X_oil
Hourly Emissions	E_h	E_h
Operating Time	T_<unit/stack>	T_CS1

(4) **Example Formulas**

Example #1: NO_x Emission Rate Calculation for Coal-fired Unit. Assume you have a bituminous coal-burning unit with a primary NO_x system (assigned ID# 001) containing the following components, identified in Table B.

NO_x Analyzer: Component ID# 001; Sample Acquisition Method: Dilution

CO_2 Analyzer: Component ID# 002; Sample Acquisition Method: Dilution

Submit RT 520 for the formula to compute the NO_x emission rate. Enter the formula ID 001 at column 11. At column 14, enter the parameter "NOX". Referring to the appendices in 40 CFR Part 75, note that the NO_x emission rate should be determined by using formula F-6. Enter "F-6" in the field for Formula Code at column 18. Record the actual formula in the

field for formula text at column 23. According to 40 CFR Part 75, Appendix F, formula F-6 is defined as follows:

$$E = K \times C_w \times F_c \times \frac{100}{\%CO_{2_w}}$$

Enter the formula as it is defined in formula F-6, replacing its variables with the appropriate constants and references to the appropriate primary monitoring system components. In this example, the conversion factor K for NO_x is equal to 1.194 x 10^{-7} lb/scf/ppm, the F_c factor for bituminous coal is equal to 1800 scf CO_2/mmBtu, and the symbols S#(001-001) and S#(002-001) refer to the concentration of NO_x (in ppm) and CO_2 (in percent) measured by the two monitors in the same primary NO_x system. The entry in column 23 for F#(001) would appear as follows:

```
E!h = 1.194 * 10**-7 * S#(001-001) * 1800 * (100/S#(002-001))
```

Example #2: NO_x Emission Rate Calculation for Coal and Oil-fired Unit. Assume you have the same monitoring system described in example (1) above, except that two different fuels will be combusted: bituminous coal and oil. You may choose to include two formulas: one to be used when coal is combusted, and one to be used when oil is combusted. The formula for oil will have a different formula ID, and it will contain the appropriate F_c factor for oil. In this example, you could create a formula #002, that would appear as follows:

```
E!h = 1.194 * 10**-7 * S#(001-001) * 1420 * (100/S#(002-001))
```

If you intend to burn coal and oil simultaneously, you have two options:

- Use the formula with the highest F_c factor -- in this case formula #001, the formula for coal; or
- Instead of calculating two separate NO_x formulas, use a pro-rated F_c factor. To do this, first create a formula for the pro-rated factor in RT 520. Assign this formula a unique formula ID, for example, formula ID "003". In the field at column 14, enter the parameter "FC" for carbon-based F-Factor. In the field at column 18, enter the appropriate

formula code. Referring to the appendices in 40 CFR Part 75, note that the pro-rated F_c factor is determined by using formula F-8. Enter "F-8" in column 18. Then enter the actual formula in the field for formula text at column 23. Formula F-8 is defined as follows:

$$F_c = \sum_{i=1}^{n} X_i \times (F_c)_i$$

Enter the formula as it is defined in formula F-8, replacing the summation notation with the actual references to various fuels that will be combusted. In this example, enter 1800 and 1420 as the F_c factors for coal and oil respectively, and X_{coal} and X_{oil} to represent the fraction of total heat input derived from coal and oil respectively. The entry beginning in column 23 would therefore appear as follows:

Fc = (X(coal) * 1800) + (X(oil) * 1420)

Then enter a formula for the NO_x emission rate calculation. This formula will be similar to the other NO_x formulas, except that it will have a different formula ID, and it will contain a reference to the previous defined formula for the pro-rated F_c factor. In this example, you could create a formula ID #004, that would appear as follows:

Eh = 1.194 * 10-7 * (S#(001-001) * F#(003) * (100/S#(002-001)**

The notation F#(003) is the reference to formula ID #003 that computes the pro-rated F_c factor.

Example #3: Heat Input Apportionment Formulas for Common Stacks. Assume you have two units (boiler 1 and 2) sharing a common stack. Formula ID #100 calculates hourly heat input for the stack. You must calculate and report hourly heat input for each of the two units. To do this, apportion the heat input at the common stack as a ratio of the load from each unit to the load from all of the units at the stack. In this example, create RTs 520 for Unit #1 and for Unit #2 containing unit heat input apportionment formulas. For Unit #1, assign formula ID #101. Enter the parameter "HI" for heat input. Enter F-20A as the formula code. Assuming you use gross

electrical output (in megawatts) as the equivalent of load, your formula in column 23 would appear as follows:

HI_1 = (F#(100) * T_CS1/T_1) * MW_1 * T_1 /(MW_1 * T_1 + MW_2 * T_2)

F#(100) represents the heat input formula for the common stack; T_CS1, T_1 and T_2 represent the hourly operating time for the common stack, Unit 1 and Unit 2 respectively; MW_1 and MW_2 represent the gross electrical output for Units 1 and 2 respectively. Create a second, similar formula record for the hourly heat input for Unit 2.

Example #4: Appendix D Heat Input Formula for Oil-Fired Unit. For an oil-fired unit, you may report heat input using the hourly fuel flow and heat content. Assume you have recorded in Table B a volumetric oil flow monitoring system (assigned System ID# 200), which included the following components:

Flowmeter Measuring Main Oil Flow (in bbl/hr): Component ID# 001
Flowmeter Measuring Return Oil Flow (in bbl/hr): Component ID# 002

Create RT 520 for the formula to calculate the net volumetric flow of oil. First assign a formula ID # and enter it in column 11 (for example, formula ID # "200"). In column 14, enter the parameter "FOIL". Leave column 18 blank. Enter the formula in column 23. Since the flow of the consumed oil is determined by subtracting the return flow from the flow of oil from the source, the entry in column 23 would appear as follows:

Net Oil Flow = S#(001-200) - S#(002-200)

Add another RT 520 to calculate the mass of oil consumed per hour. Assign and enter a formula ID # (for example, formula ID # "201"). Enter the parameter "OILM" in column 14. In the Table above, formula D-3 is used to calculate the mass of oil consumed per hour from the volumetric flow of oil consumed. Enter "D-3" in column 18. Enter the actual formula in column 23. According to Appendix D, formula D-3 is defined as follows:

$$M_{oil} \text{ ' } V_{oil} \times D_{oil}$$

Enter the formula as it is defined in formula D-3, replacing its variable for volumetric oil flow with the appropriate reference. In this example, the symbol F#(200) refers to the previously entered formula that calculated the volumetric flow of oil consumed. For formula ID #201, the entry in column 23 would appear as follows:

MASS_oil = F#(200) * DENSITY_oil

Please note that you do not have to replace the variable indicating the density of the oil, since this value is not a constant and it is not measured by a monitoring system component.

Example #5: Heat Input Summation Formulas for Multiple Stacks. Assume that you have one unit (boiler 1) which has two multiple stacks (MS1 and MS2). Formula ID #100 calculates hourly heat input for MS1 and Formula ID #200 calculates hourly heat input for MS2. You must calculate and report hourly heat input at the unit level. To do this, sum the heat input from the multiple stacks. In this example create RT 520 for Unit #1. Assign formula ID #102. Enter the parameter "HI" for heat input. Enter F-20C as the formula code. Your formula in column 23 would appear as follows

HI_1 = (F#(100)*T_MS1 + (F#(200) * T_MS2)/T_1

F#(100) represents the heat input formula for multiple stack MS1; F#(200) represents the heat input formula for multiple stack MS2; T_MS1, T_MS2 and T_1 represent the operating times for multiple stacks 1 and 2 and unit 1 respectively and HI_1 represents the total heat input for unit 1.

I. RT 530: Span Information

If you use a CEMS methodology you must include RT 530 for each parameter (e.g., NO_x, CO_2, O_2 or flow) that is measured using CEMS. These records contain information not only on the span and range

values associated with a unit or stack, but also the time period in which these values are used for measurement and quality assurance test purposes. When you submit RTs 530, submit records for all spans used at that unit or stack during the reporting period.

For each parameter and scale enter the information as appropriate. If the parameter and scale are not applicable (i.e., there is no analyzer for the parameter at the unit or stack or a low scale span calculation is not required) do not provide RT 530.

Every unit or stack using CEMS that uses a single scale should report a high scale span record, even if the emission readings are "low" by ordinary standards. If the majority of NO_x concentrations are expected to be less than 20 percent of the full-scale range of the "high-scale" analyzer (due to the presence of emission controls), you must also provide "low-scale" span and calibration values. If the CO_2 or O_2 concentrations are expected to be consistently low, also provide the "low-scale" values for these monitors.

For by-pass stacks which report data based on maximum potential concentration and flow and which do not have CEMS installed, provide all MPC, MPF (maximum potential flow), and maximum NO_x emission rate information in RTs 530.

If you are required to have both a high range and low range CEMS, but elect to use a default (based on 200% of MPC for NO_x concentration and MER for NO_x emission rate) for hours requiring high scale reading, submit both high scale and low scale span records for the unit or stack. In the high scale record, report the span value and the default only.

Field Definitions and Instructions

Parameter Monitored. Identify the parameter monitored at the unit or stack using the following upper case codes:

SO2	SO_2 Concentration (ARP only)
NOX	NO_x Concentration (ppm)
FLOW	Stack Flow (SCFH)
CO2	CO_2 Concentration (%)
O2	O_2 Concentration (%)

Scale. For NO_x, CO_2, or O_2 diluent analyzers, enter either "H" to indicate high scale or "L" to indicate low scale.

There is only a single scale of values for flow monitors. Leave the scale blank for flow span records.

For a low-emitting unit with a single NO_x span, identify the span as "high" scale, regardless of the fact that the emissions are very low.

Method for Calculating MPC/MEC/MPF. For NOX and FLOW, enter the method used to determine the maximum potential (or expected) concentration (or flow rate) using the appropriate upper case codes.

F	Formula (SO_2 Flow and low-scale NO_x only)
HD	Historical Data
TR	Test Results
TB	Table of Constants from Part 75
OL	Other Limit

If you use formulas A-1a or A-1b from Appendix A of Part 75 or historical data to determine maximum potential flow (MPF), submit documentation with your original hardcopy monitoring plan submission and retain the supporting information in your files.

The following table summarizes the recommended methods for determining MPC/MEC/MPF for NO_x Budget Program purposes.

TABLE 12

CRITERIA FOR MPC/MEC/MPF DETERMINATIONS			
Parameter	**Scale**	**Method Used to Determine MPC/MEC/MPF**	**Selection Criteria**
NO_x	High	800 ppm	For coal-fired units
		400 ppm	For oil- or gas-fired units
		Historical CEM Data (over the previous 30 unit operating days)	If available
		Other Constant Values	If historical data not available. By boiler type and fuel.
		Test Results	If historical data not available
NO_x	Low	Formula A-2	For units with emission controls
		Historical CEM Data (over the previous 30 unit operating days)	If available
		Test Results	If available, assuming no CEM data available
		Other, including other State/federal requirements	As justified, assuming no CEM data available
Flow	N/A	Formula A-3a	Based on % CO_2
		Formula A-3b	Based on % O_2
		Test Results	If available

MPC/MEC/MPF. For NO_x, enter the maximum potential (or expected) concentration (MPC/MEC) in ppm. For flow, enter the maximum potential flow rate in units of standard cubic feet per hour (scfh) on a wet basis. For CO_2 and O_2, leave this field blank.

Maximum NO_x Emission Rate (MER). If you use NO_x CEMS you must calculate and report a maximum NO_x emission rate for each unit or stack for use with missing data procedures.

Calculate NO_x MER on a unit or stack basis by using one of the following formulas and values. Please note that NO_x MER for CEMS units is not based on historical data.

Formula F-5

$$E = K \times C_d \times F_d \times \frac{20.9}{20.9 - \%O_{2_d}}$$

where:

C_d	=	NO_x concentration (dry) (as reported in field beginning at column 17)
Fd (dscf/mmBtu)	=	Dry basis F-factor used for the unit in RTs 520
$\%O_{2d}$	=	Maximum Oxygen Concentration during normal operating conditions

Formula F-6

$$E = K \times C_w \times F_c \times \frac{100}{\%CO_{2_w}}$$

where:

C_w	=	NO_x concentration (wet) (as reported in field beginning at column 17)
F_c (scf CO_2/mmBtu)	=	Carbon-based F-factor used for the unit in RTs 520

% CO_2	=	Minimum Carbon Dioxide Concentration during normal operating conditions

Please note that for NO_x MER calculated using an F-6 formula you should use the minimum %CO_2 value or for an F-5 formula the maximum %O_2 value (under normal operating conditions).

Report maximum NO_x emission rate only in RT 530 submitted for high-scale NO_x span. In all other RTs 530 leave this field blank.

Span Value. Enter the span value approved by the State or determined according to the requirements of Part 75. Under Part 75 high-scale span values for NO_x monitors must be between 100 and 125% of the maximum potential concentration, rounded up to the next 100 ppm (or rounded up to the nearest 10 ppm if 125% of MPC is less than 500 ppm). Low-scale span values must be equal to 100 to 125% of the MEC, rounded up to the nearest 10 ppm.

For non-differential pressure (DP) type flow monitors, the span value must be between 100 and 125% of the "calibration MPF" rounded up to no less than two significant figures. Calibration MPF is the value reported as the MPF in units of wet scfh converted to units used for calibration purposes. Enter the values for span and full scale range in the same units as the "calibration MPF."

For DP type flow monitors, select a value between 100% and 125% of the MPV in spfm and convert that value to actual feet per second (afps). Then use Equation 2-9 in Reference Method 2 (40 CFR 60 Appendix A) to convert the actual velocity to an equivalent delta P value in inches of water. Retain at least two decimal places in the resulting delta P span value.

For CO_2 and O_2, enter the appropriate percentage, not ppm.

Full-Scale Range. Enter the full-scale range of the analyzer or flow CEMS, such that the majority of the readings obtained during normal operation of the monitor are between 20 and 80 percent of this value. This value must be greater than or equal to the span value.

MPC, MEC, Span and Full Scale Range Units of Measure. Enter the units used to report the previous values. For SO_2 and NO_x, enter "PPM." For CO_2 or O_2, enter "%." For flow, enter one of the following codes to indicate the units used to report and perform calibrations based on span and to report full-scale range.

SFPM	Standard Feet Per Minute
KSFPM	Thousand Standard Feet Per Minute
SCFM	Standard Cubic Feet per Minute
KSCFM	Thousand Standard Cubic Feet per Minute
SCFH	Standard Cubic Feet per Hour
KSCFH	Thousand Standard Cubic Feet per Hour
ACFM	Actual Cubic Feet per Minute
KACFM	Thousand Actual Cubic Feet per Minute
INH20	Inches of Water
ACFH	Actual Cubic Feet per Hour
KACFH	Thousand Actual Cubic Feet per Hour
AFPM	Actual Feet Per Minute
KAFPM	Thousand Actual Feet Per Minute
MSCFH	Million Standard Cubic Feet per Hour
MACFH	Million Actual Cubic Feet per Hour

Span Effective Date and Hour. Enter the date and time on which this span and range value were first used to measure emissions. If the span and range stays the same for a long period of time, leave the original date; do not change relative to the reporting period. For example, if you establish a span of 400 for NO_x on June 30, 1998 for initial testing purposes and the span remains unchanged, continue to report RT 530 with an effective date of "980630."

Span Inactivation Date and Hour. Enter the date and time on which the span and range value are changed to new values. Submit a new RT 530 with an effective date of

the same (or next) day to report the new span and range values. For the current span, leave this date blank.

Dual Range Analyzer Required. If a dual range analyzer is required, indicate this and/or the monitoring approach used for the secondary scale, using one of the following upper case codes:

D	Dual Range CEM Installed
O	Dual Range Required/Use of Optional Default Value Elected

Default High Range Value (200% of MPC). If you indicate that you are electing to use a default value for all hours in which a high range CEM would be required by entering "O" in column 84, enter the actual default value. This value should be 200% of the maximum potential concentration reported in column 62.

J. RT 531: Maximums, Minimums, Defaults, and Constants

Submit one RT 531 for each default value, maximum, minimum or moisture constant for the unit or stack which is required as part of the monitoring plan. You must define any maximum or default used for non-standard Part 75 missing data purposes or as a primary or secondary monitoring methodology for determining NO_x emission rate, heat input or NO_x mass emissions.

Field Definitions and Instructions

Parameter. Identify the parameter for which a default or maximum value is defined in the record using the following upper case codes:

CO2M	Minimum Percent CO_2
CO2X	Maximum Percent CO_2
DENS	Density
GAS	Gas Fuel Flow Rate
GCV	Gross Calorific Value
H2O	Hourly Percent Moisture Constant
HI	Maximum Heat Input Rate (mmBtu/hr)

NOXG	Generic NO_x Default Emission Rate (lb/mmBtu)
NOXU	Unit-Specific Default NO_x Emission Rate (lb/mmBtu)
O2M	Minimum Percent O_2
O2X	Maximum Percent O_2
OILV	Volumetric Oil Fuel Flow Rate
OILM	Mass Oil Fuel Flow Rate

Value of Default Maximum, Minimum or Constant. Enter the value to be used to the number of decimal places consistent with the value reported in the EDR.

Units of Measure. Identify the units of the default value using the following upper case codes:

%	Percent
%H2O	Percent Moisture
BBLHR	Barrels Per Hour
BTULB	BTU Per Pound
BTUHSCF	BTU Per 100 Standard Cubic Feet
HSCF	100 Standard Cubic Feet Per Hour
GALHR	Gallons Per Hour
LB	Pounds
LBMMBTU	Pounds Per Million BTU
LBBBL	Pounds Per Barrel
LBGAL	Pounds Per Gallon
LBHR	Pounds Per Hour
LBM3	Pounds Per Cubic Meter
LBSCF	Pounds Per Standard Cubic Feet
M3HR	Cubic Meters Per Hour
MMBTU	Million BTU
MMBTUHR	Million BTU Per Hour
MMBTULB	Million BTU Per Pound
PPM	Parts Per Million
SCFH	Standard Cubic Feet Per Hour

Purpose or Intended Use. Identify the purpose or intended use of the value for reporting and emissions measurement using the following upper case codes:

PM	Primary Measurement Methodology
MD	Missing Data Only
SE	Scale Exceedances
SM	Secondary Measurement Methodology

Type of Fuel. For fuel-specific defaults, identify the type of fuel associated with the default using one of the following codes:

CL	Coal
DSL	Diesel Oil
LPG	Liquefied Petroleum Gas
NFS	Non-Fuel Specific
OGS	Other Gas
OIL	Residual Oil
OOL	Other Oil
PNG	Pipeline Natural Gas
PRG	Process Gas
R	Refuse
W	Wood

Indicator for Use for Controlled/Uncontrolled Hours. If the value is used only for controlled or uncontrolled hours, indicate this using a "C" or "U," as appropriate. If the value is not related to the control status of the unit, report "A" for "any hour."

Source of Value. Indicate the means of selecting or determining the Maximum, Minimum or Constant value using the following upper case codes:

CONT	Contract Maximum
DATA	From Historical Data
DES	Maximum Design Capacity (Flow Rate Only)
EF	Emission Factor
NBP	NO_x Budget Program Generic Defaults
NPC	Based on Nameplate Capacity
PERM	Permit Limitation
TEST	Unit/Stack Testing

Value Effective Date and Hour: Enter the date and hour on which you began use of this default for purposes of reporting data for the program. If the value is determined and used at the beginning of the program, enter the date July 1, 1998 hour 00 and do not change this date unless you change the default value or add a new type of default value. Do not change the date each year or in each reporting period to the beginning date of the period.

Value No Longer Effective Date and Hour: Enter the date and hour on which the value was changed or after which it will no longer be used. Submit a new RT 531 with an effective date and hour on the same (or next) day to report a new value. For values currently in use, leave this date blank.

K. RT 535: Unit and Stack Operating Load Data

For each unit or stack on which CEMS are installed report RT 535. This record defines the unit or stack load levels used for flow RATAs and to establish load bins for missing data purposes. For units or pipes using Appendix D missing data procedures, complete only the first four fields (columns 1 - 20).

Field Description and Instructions

Load Units. Identify the type of load information reported in this record using one of the following codes:

MW	Electrical Capacity (in megawatts)
ST	Steam (in units of 1000 lbs/hr)

Maximum Hourly Gross Load. Define the maximum load associated with the unit, stack or pipe at full capacity. This value may be based on the nameplate capacity, nameplate capacity as derated, or a value higher than nameplate, if the unit or stack historically operates at levels exceeding nameplate.

Designated Normal Load. Indicate the load level at which the unit normally operates using the following upper case codes:

L	Low
M	Medium
H	High

If the unit is a peaking unit or bypass stack, leave this field blank.

For multiple-load flow RATAs, a bias test is performed at this load level.

Single Load Testing Only Flag. If you are eligible for or have received State approval to perform single load testing for flow, report one of the following upper case codes to indicate the basis on which you qualify.

B	By-pass Stack
P	Peaking Unit
S	Approved by State

L. RT 540: Fuel Flowmeter Data

Report information on fuel flowmeter systems in RT 540. This record does not report data on individual components. Report one RT 540 for each GAS, OILV, or OILM system in RT 510. For systems comprised of multiple components using different methods of calibration, you may report the RT 540 for the system more than once, changing only the calibration method beginning in column 38 in the subsequent records.

Field Definitions and Instructions

Parameter Monitored. Report the parameter measured by the system (GAS, OILV or OILM).

Type of Oil or Gas. Enter the type of fuel measured by the system using one of the following codes:

DSL	Diesel Oil

LPG	Liquefied Petroleum Gas
OGS	Other Gas
OIL	Residual Oil
OOL	Other Oil
PNG	Pipeline Natural Gas
PRG	Process Gas

Maximum System Fuel Flow Rate. To report the system maximum fuel flow rate for a system comprised of main supply and return components, calculate the net system maximum assuming that the main supply is operating at maximum design or operating flowrate and that the return supply is zero.

Units of Measure for Maximum Fuel Flow Rate. Enter the units of measure for fuel flow provided by the system. For volumetric flow of oil, enter SCFH, GALHR, BBLHR or M3HR. For mass of oil enter LBHR. For gas flow enter HSCF.

Source of Maximum Rate. Enter either URV to indicate that the maximum rate is based on the upper range value, or UMX to indicate that the maximum rate is determined by the amount of fuel which can be combusted by the unit.

Initial Accuracy Test Method. Identify the initial and ongoing accuracy test methods for the fuel flow meters. If you use an accuracy test method other than those identified in Appendix C to the Technical Guidance, submit this information with your monitoring plan.

Submission Status. Enter A (add), C (correct), D (delete), or U (unchanged), as appropriate.

M. RT 550: Monitoring System Missing Data Reasons

Report this record type to identify the reasons for any periods in which data is missing or unavailable during the reporting period. If more than one reason is relevant because there are primary and backup monitoring systems installed and certified, report multiple RTs 550, one for each system. This record is optional for NO_x budget units and for Acid Rain units after January 1, 2000.

Field Descriptions and Instructions

Parameter. For each record identify the parameter for which data is missing using the following codes:

SO2	SO_2 Concentration
CO2	CO_2 Concentration
NOX	NO_x Emission Rate
NOXC	NO_x Concentration
O2	O_2 Concentration
FLOW	Stack Flow
OILM	Mass of Oil
OILV	Volumetric Flow of Oil
GAS	Gas
HI	Heat Input
H2O	Moisture
LTOL	Long Term Oil
LTGS	Long Term Gas

Monitoring System ID. Report the monitoring system ID for the system which was not able to provide data. Do not report the component ID in this field, even if the problem is caused by a specific component in the system. If a problem such as DAHS failure causes data from all primary and backup systems for a pollutant to be unavailable and you report the cause using as Reason Code 1, 2 or 3, you may leave the monitoring system ID blank.

Begin Date and Hour of Missing Data Period. Report in these fields the date and hour in which data was not available for the parameter and system.

End Date and Hour of Missing Data Period. Report in these fields the date and hour in which data was available for the parameter and system. Leave this field blank if the missing data period continued beyond the reporting date for this reporting period. Report the same RT 555 again with the actual end date and hour in the report for the reporting period in which this occurs.

Missing Data Reason Codes. Use the following codes to categorize reasons for missing data.

1	DAHS Hardware Failure
2	DAHS Software Failure
3	DAHS Maintenance/Upgrade
4	PLC Hardware Failure
5	PLC Software Failure
6	PLC Maintenance/Upgrade
7	Out-of-Control: Calibration Test
8	Out-of-Control: Linearity Check
9	Out-of-Control: RATA
10	Monitor Off Line for Calibration
11	Monitor Off Line for Linearity Check
12	Routine Maintenance
13	Analyzer Failure
14	Probe Failure
15	Sample Transport System Failure
16	Erratic Analyzer Response
17	Electrical Failure
18	Lightning
19	Range Exceeded
20	QA/QC Activities
21	Fuel Flowmeter Failure
22	Out-of-control: Fuel Flowmeter Calibration
23	Sampling Failure
24	Sample Loss or Contamination
25	Interference Check Failure
26	Leak Check Failure
99	Other (Describe)

Missing Data Description. If the reason code adequately characterizes the event, leave the reason description field blank. Similarly, if the corrective action is self-evident (such as conducting a successful daily calibration) leave this field blank. If you reported the missing data codes as "99" you must describe the reason in this field.

Corrective Action Description. Provide a brief description of the actions taken to address the reason for the missing data.

N. RT 555: Recertification and Maintenance Events

In the normal course of maintaining and operating monitoring systems for the NO_x Budget Program, States anticipate that facilities will need to replace or repair various components or change the type of equipment or software installed to measure and report emissions. To report these events and the status of recertification testing, report information in RT 555. These events include:

- Change-outs of analytical components and DAHS vendor changes, subject to the limitations on overlapping data reporting described below.

- DAHS version upgrades, which require DAHS verification and successful daily calibration (of all associated systems) prior to recertification.

- Other system modifications which require one or more tests determined in consultation with EPA Regional Office and Headquarters staff.

RT 555 applies to recertification and maintenance events for all certified monitoring systems, including primary, redundant backup and backup systems. It also applies to oil and gas fuel flowmeter systems. Each RT 555 defines the beginning of a time period during which a monitoring system cannot report quality-assured data. If no other failing tests occur and all other routine quality assurance tests are performed successfully, the system can report quality-assured data only when all of the required recertification tests are successfully completed.

Field Descriptions and Instructions

Monitoring System ID. Provide the monitoring system ID for the system affected by the event. Do not leave this field blank.

Beginning Date and Hour of Event. Enter the date and hour during which the component/system is deemed to be out-of-control as a result of the reported event.

Recertification Event Code. Report one of the following codes. If there is no applicable event code, use the code "99" for "Other" and provide a brief description.

3	Analyzer Change-out
99	Other

Recertification Event Description. Provide information if the code does not adequately explain the reason or event. Provide a description for all events reported with the code "99" for "other." If the space available is not adequate, provide supplementary information in RT 910.

Recertification Event Response/Action Taken. Provide a brief description of the corrective action or response taken to the event necessitating recertification.

Fields System to Indicate Required Recertification Tests. Determine the appropriate tests for each type of event as provided in State or NO_x Budget Program guidance. If the action taken requires determination of appropriate recertification tests in consultation with your State regulatory agency, contact them for guidance or a

determination. Use the following codes to indicate the tests deemed appropriate to recertify the monitoring system.

Test Codes

7CE	7-Day Calibration Error
DLC	Daily Calibration
RET	Inactive/Retired
LIN	Linearity
RAN	Relative Accuracy/Bias Test - Normal Load
RA3	3-Load RATA
CTT	Cycle Time Test
VER	DAHS Verification
INT	Interference Check
LCK	Leak Check

Completion Date and Hour of Required Recertification Tests. If all required recertification tests are completed during the quarter in which the RT 555 is reported, report the date and hour in which the system is determined to be in-control. If the system is not recertified by the end of the quarter, leave the date and hour blank. If the recertifications are completed in a subsequent quarter, submit an identical RT 555 with the date and hour of completion of recertification tests in the appropriate quarterly report file.

O. RT 560: Appendix E NO_x Correlation Curve Segments

For each unit using Appendix E methodology to determine hourly NO_x emission rate submit one set of records defining the Appendix E NO_x correlation curves established by Appendix E testing and used to determine the rate each hour. For most units, each set of records should consist of at least four records: one for the load level zero representing the segment of the correlation curve below the minimum heat input level represented by load level 1 and three segments defined by the test results from four operating levels tested under Appendix E. If more than four levels of testing were performed there should be one segment record for each additional operating level. Order these records within the record type by operating level in ascending order (0 - 4+). The graph below represents the relationship of operating level test data in RT 651 and segments defined in RT 560.

Field Descriptions and Instructions

Operating Level. Report "0" to represent the operating level represented by heat input which is less than the heat input rate for operating level 1 reported in RT 651. For all other records, report the operating level in RT 651 associated with the value for heat input reported as Heat Input #1

(Low) and representing the lower bound of the curve segment.

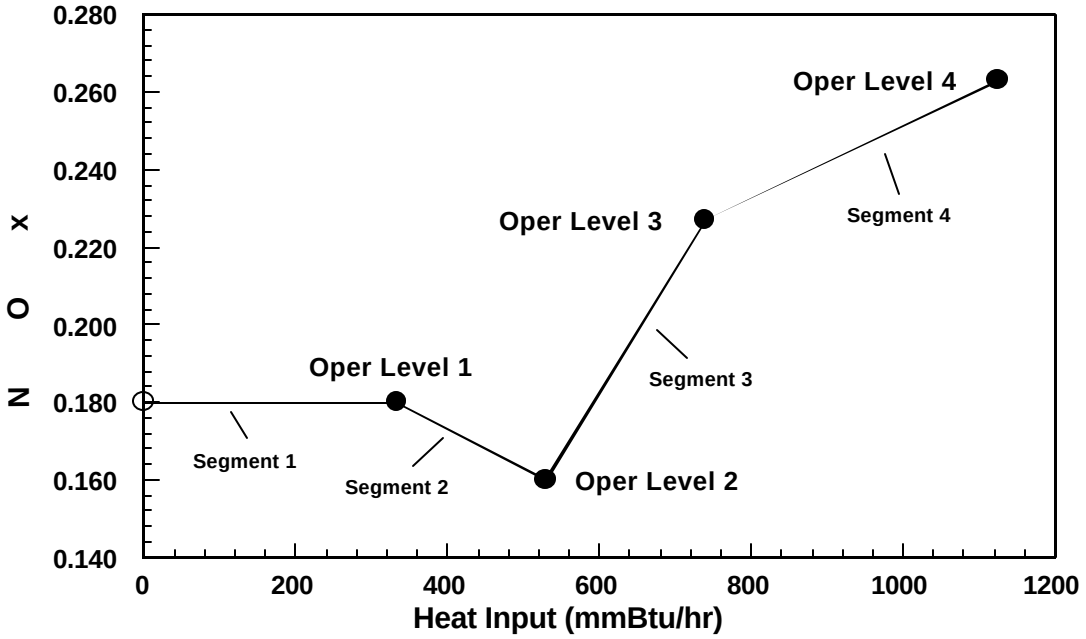
Segment ID. For each segment of the curve, assign a unique segment ID consisting of three alpha-numeric characters.

NO_x Monitoring System ID. Report the monitoring system ID for the Appendix E NO_x emission rate system certified and used to report NO_x emission rate data.

Heat Input #1 (Low). For operating level 0 the lower bound heat input value should be zero. For all other segments, the lower bound heat input value is the heat input associated with the operating level for the record, as reported in RT 651.

Heat Input #2 (High). For operating level zero the higher bound heat input value is the heat input reported for operating level 1 in RT 651. For all other records, the higher bound heat input is the heat input value reported in RT 651 for the next highest operating level.

FIGURE 2: EXAMPLE NO_x CORRELATION CURVE SEGMENTS



NO_x Rate #1. For operating level zero, both NO_x Rate #1 and NO_x Rate #2 are the NO_x emission rate reported in column 23 for operating level 1 in RT 651. For all other operating levels, NO_x Rate #1 should be the NO_x emission rate reported in RT 651 associated with the operating level for the record.

NO_x Rate #2. For operating level zero, NO_x Rate #2 is the NO_x emission rate reported in column 23 for operating level 1 in RT 651. For all other operating levels, NO_x Rate #2 should be the NO_x emission rate reported in RT 651 associated with the next operating level for the record.

Type of Fuel. Report in this field the type of fuel used during Appendix E testing using the following codes:

DSL	Diesel
LPG	Liquefied Petroleum Gas
PNG	Pipeline Natural Gas
OIL	Residual Oil
PRG	Process Gas
OOL	Other Oil
OGS	Other Gas
MIX	Mixture

P. RT 585: NO_x Budget Program Monitoring Methodology Information

Submit one or more RTs 585 for each NO_x Budget Program unit to define the monitoring approaches used to determine NO_x mass emissions. Do not report RTs 585 for any stacks or pipes defined for reporting purposes. If you calculate NO_x mass emissions by determining NO_x emission rate (CEMS, Appendix E or defaults) and heat input, submit two RTs 585, one to describe the methodology for NO_x emission rate and one for heat input. If you use a NO_x concentration CEMS and stack flow readings to determine NO_x mass emissions, submit one RT 585 to identify the NO_x mass emissions methodology. If you use several methodologies or combination of methodologies, either as a backup or to address different fuels, submit multiple RTs 585.

Field Descriptions and Instructions

Parameter. Identify the parameter to which the monitoring methodology applies using the following codes:

CO2	CO_2 Concentration (ARP only)
HI	Heat Input
NOXR	NO_x Emission Rate
NOXM	NO_x Mass Emissions
OP	Opacity (ARP only)
SO2	SO_2 Concentration (ARP only)

Monitoring Methodology. Enter one of the following codes to describe the methodology used for the parameter and fuel type indicated in the record.

Code	Methodology Description	Related Parameter
AE	Appendix E NO_x Emission Rate	NOXR
ALT	Alternative Heat Input Methodology	HI
AMS	Alternative Monitoring Systems	HI, NOXM, NOXR
CEMS	Continuous Emission Monitors	HI, NOXM, NOXR
GDEF	Generic Default Emission Rate	NOXR
GFF	Hourly Gas Flow	HI
LTGF	Long Term Gas Flow Measurements	HI
LTOF	Long Term Oil Flow Measurements	HI
MHHI	Maximum Hourly Heat Input	HI
OFF	Hourly Oil Flow Measurements	HI
UDEF	Unit Default Emission Rate	NOXR

Type of Fuel Associated with Methodology. Indicate the type of fuel(s) associated with the methodology using one of the following codes:

C	Coal
DSL	Diesel
LPG	Liquefied Petroleum Gas
NFS	Non-Fuel Specific
OGS	Other Gas
OIL	Oil
OOL	Other Oil
PNG	Pipeline Natural Gas
PRG	Process Gas
R	Refuse
W	Wood

Primary/Secondary Indicator. Indicate whether you intend to use this methodology as a primary or secondary (backup) methodology for the unit, parameter and type of fuel by using the following codes:

P	Primary
S	Secondary

Missing Data Approach: Indicate the approach used with the methodology to determine substituted values during periods of missing data. Use one of the following codes:

DEF	Maximum/Minimum Defaults in RT 531
LOAD	Load Based Missing Data Procedures
NA	Not Applicable

Start Date: Provide the actual date on which the methodology was first used to determine emissions or heat input.

End Date: Provide the actual date on which the methodology was last used to determine emissions or heat input. If the methodology is currently in use, either as a primary or secondary methodology, leave this field blank.

Q. **RT 586: Control Equipment Information**

Report one or more RTs 586 to define the types of control equipment in place or planned for each unit. Do not report any RTs 586 for an uncontrolled unit or for a unit which "controls" emissions by limiting production or by switching fuels.

Do not report RTs 586 for any stacks or pipes defined for reporting purposes.

Field Descriptions and Instructions

Control Equipment Code. Indicate the type of NO_x controls using the following codes:

CM	Combustion Modification/Fuel Reburning
H2O	Water Injection
LNB	Low NO_x Burner Technology (Dry Bottom Boilers only)
LNBO	Low NO_x Burner Technology with Overfire Air (Dry Bottom Boilers Only)
LNC1	Low NO_x Burner Technology with Close-Coupled OFA (Tangentially fired units only)
LNC2	Low NO_x Burner Technology with Separated OFA (Tangentially fired units only)
LNC3	Low NO_x Burner Technology with Close-Coupled and Separated OFA (Tangentially fired units only)
LNCB	Low NO_x Burner Technology for Cell Burners
NH3	Ammonia Injection
O	Other
OFA	Overfire Air
SCR	Selective Catalytic Reduction
SNCR	Selective Non-catalytic Reduction
STM	Steam Injection

Primary/Secondary Indicator. Indicate whether you intend to use the control methodology as a primary or secondary (backup) methodology for the unit by using the following codes:

P	Primary
S	Secondary

Original Installation. Enter an "O" to indicate that the control equipment was installed and operational as part of the original unit design.

Controls Install Date. If the control equipment was not part of the original installation, provide the approximate date on which controls were installed or will be installed at the unit. Leave this field blank if it is not applicable.

Controls Optimization Date. If the control equipment was not part of the original installation, provide the approximate date on which optimization of the control equipment was completed and the equipment fully operational at the unit. Leave this field blank if it is not applicable.

Controls Retirement Date. Enter the date on which the control equipment was removed or retired from the unit. Leave blank if the control equipment is still in use.

Seasonal Controls Indicator. Indicate whether NO_x control equipment is used only during the ozone season by reporting an "S"; otherwise, leave this column blank.

R. **RT 587: Unit Classification by Fuel Type**

Provide RT 587 for each fuel burned at each unit. Do not provide RT 587 for stacks or pipes. Note that this record is not used to indicate which fuel is burned on a day-to-day basis; it is used to indicate the primary and secondary fuels combusted by each unit, to report changes in the types of fuels or the classification of the unit based on fuel usage (e.g., gas-fired to oil-fired) and to indicate when such changes occurred. (Note that RT 587 replaces columns 55 and 95 of RT 502.)

Field Descriptions and Instructions

Fuel Type. Enter one of the following codes to indicate the fuel type use described by this record:

C	Coal
DSL	Diesel
GAS	Gas
LPG	Liquefied Petroleum Gas
OGS	Other Gas
OIL	Residual Oil
OOL	Other Oil
PNG	Pipeline Natural Gas
PRG	Process Gas
R	Refuse
W	Wood

Fuel Type Start Date. In general, enter either the program participation date or the first date on which the unit combusted this fuel type, whichever is later. If this record is being used to indicate a change in the primary fuel type, enter the date on which this change occurred (for both the new primary fuel type record and each secondary fuel type record).

Fuel Type End Date. Enter the last date on which this fuel type was combusted at the unit. If not applicable, leave this field blank.

Primary/Secondary Fuel Indicator. Indicate whether the fuel type listed in column 10 is the primary fuel or a secondary fuel for this unit using the following codes:

P	Primary
S	Secondary

Ozone Season Fuel Switching. If fuel switching (to a secondary fuel or fuels) is used for seasonal control of ozone, enter "S" in this field for the secondary fuel(s) record(s). Otherwise leave this field blank.

IX. EMISSIONS REPORTING

These instructions are designed to address basic NO_x Budget Program requirements. Under a State permit or other State regulation or requirement, reporting requirements in addition to those described below may apply. A State may require the reporting of additional information for any reason, including, but not limited to:

- The need to determine emissions for configurations requiring subtraction of emissions data of non-affected units;
- To support allocation of allowances; and
- To support consolidation of reporting for more than one regulatory program

A. Emissions and QA Record Types Required for the NO_x Budget Program by Methodology

Use the record types for reporting emissions, heat input and unit operation which are required for the specific monitoring methodology selected to determine hourly mass emissions. Note that in your monitoring plan submission you should include a brief summary or description of the monitoring plan record types which will be reported for each proposed methodology. The purpose of this requirement is to avoid reporting of unnecessary or inappropriate records in the quarterly report.

(1) Operating Data

For each reporting period in which a unit, stack or pipe operated or is used, report the operating status for each hour in RT 300. However, if you use the default rate methodology for both heat input and NO_x emission rate, report the unit operating time only in RT 328 and do not report RT 300. If the unit, stack or pipe has not operated or been used for any hour in the reporting period, see the instructions for RT 307 below.

(2) Summary of NO_x Emission Rate Reporting

(a) NO_x Emission Rate CEMS

Submit RT 201 for NO_x concentration and RT 210 or 211 for either CO_2 or O_2 diluent readings for each hour (or partial hour) in which NO_x emission rate is measured and calculated. Report a RT 320 for each hour (or partial hour) in which the unit or stack operates. Report a RT 212 if hourly moisture is measured to calculate NO_x emission rate.

(b) **NO_x Emission Rate and Heat Input Based on Appendix E**

Submit either RT 323 or RT 324 for each hour (or partial hour) in which the unit operates. Use RT 323 only if the Appendix E testing was performed while the unit combusted a mixture of fuels; otherwise report RT 324 for each type of fuel combusted in the hour. If the unit is subject to a NO_x emission rate limitation or reporting requirement, a State may also require you to report the NO_x emission rate for each hour in which multiple fuels are combusted in RT 325. For each hour in which each type of oil is combusted, report RT 302 for the hour. For each hour in which each type of gas is combusted, report RT 303 for the hour. In RTs 302 and 303, report gross calorific value (GCV) and the hourly heat input rate associated with the fuel.

(c) **Unit Specific or Generic Default NO_x Emission Rates**

Do not report hourly NO_x emission rate data for units which use a default value. See the instructions for RTs 531 and 328.

(3) **NO_x Mass Calculation Based on NO_x Concentration and Stack Flow**

Submit RT 201 for NO_x concentration and RT 220 for stack flow for each hour (or partial hour) in which the unit or stack operates.

(4) **Summary of Heat Input Rate Reporting**

Depending on the configuration of units, heat input rate may not have to be monitored at the unit level to determine NO_x mass emissions. It may still be necessary to apportion heat input rate and report it on the unit level to support your state's allocation/reallocation methodology.

(a) **Heat Input Rate Based on CEMS**

Submit RT 210 or 211 (the same record reported for NO_x emission rate) and RT 220 for stack flow for each hour (or partial hour) in which the unit or stack operates. Report hourly heat input rate in RT 300.

(b) **Heat Input Rate Based on Appendix D Fuel Flow Monitoring**

Submit RT 302 for each hour for each type of oil combusted and RT 303 for each hour for each type of gas combusted. In RTs 302 and 303, report GCV and the hourly heat input rate associated with the type of fuel. Report RT 300 for each hour indicating the total heat input rate for the unit for the hour.

(c) Heat Input Rate Based on Long Term Fuel Flow Measurements

Report RT 306 for each fuel and each periodic measurement. Submit RT 302 for each hour to which the oil is apportioned over the period and RT 303 for each hour to which the gas is apportioned over the period. In RTs 302 and 303, report GCV and the hourly heat input rate associated with the type of fuel. Report RT 300 for each hour indicating the total heat input rate apportioned to the hour.

(d) Unit Specific Maximum Heat Input Capacity

Do not report hourly heat input rate if you use the maximum unit heat input capacity and a default NO_x emission rate to calculate hourly NO_x mass emissions. See the instructions for RTs 531 and 328.

(e) Alternative Heat Input Rate Methodology

If you use an approved heat input methodology, report hourly heat input rate and related information (as approved by the State regulatory agency) in RTs 300, 350, 351 and 352.

(5) NO_x Mass Emissions

For any operating hour (or partial hour) for each unit, stack or pipe at which emissions are monitored or estimated (based on any methodology), report RT 328 containing calculated NO_x mass emissions. For NO_x mass emissions measured or estimated for common stacks or pipes, do <u>not</u> apportion and report a unit value on an hourly basis. For NO_x mass emissions measured or estimated for multiple stacks or pipes, add emissions and report a unit value for each hour.

For each reporting period, report RT 307 containing quarterly and cumulative ozone season NO_x mass emissions to date in tons for each stack, pipe or unit at which emissions are measured or estimated and for each unit subject to NO_x Budget Program requirements.

B. Record Type Instructions for Emissions Data

Following the required RTs 100 and 102 for each unit, submit operating data and emissions data including one or more of the following record types.

(1) RT 200: SO_2 Concentration

This record type supports SO_2 reporting for Part 75. In some cases, States may request and sources may agree to the reporting of SO_2 information in the quarterly report. Do not report information for non-Part 75 NO_x budget units unless specifically requested to do so. For more information, see the EDR instructions for the Acid Rain Program.

(2) RT 201: NO_x Concentration

If you use a NO_x emission rate system certified for Acid Rain Program or the NO_x Budget Program to determine NO_x emission rate, report hourly NO_x concentration for each hour for which measured NO_x emission rate is reported in RT 320 using columns 1 through 31 only. If you report missing data in RT 320, do not report RT 201 for the hour.

If you use a NO_x concentration system and a flow monitor to calculate hourly NO_x mass emissions, report NO_x concentration in RT 201 using columns 1 through 48 for each hour (or partial hour) of unit or stack operation.

Field Descriptions and Instructions

Monitoring System and Component ID. For each hour of measured data, identify the monitoring system and component used during the hour.

Average NO_x Concentration for the Hour. Report the measured NO_x concentration for the hour, expressed in parts per million, rounded to one decimal place. During missing data hours for NO_x concentration systems only, leave this field blank.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the type of monitoring system used to measure NO_x concentration for the hour.

All Systems

01	Primary Monitoring System
02	Backup or Redundant Backup Monitoring System
03	Approved Subpart E Alternative Monitoring System
04	Reference Method Backup System (Method 7E)
54	Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as

unavailable hours for percent availability calculations.

55 Other substitute data approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are not included in missing data lookback and are included as unavailable hours for percent availability calculations.

NO_x Concentration Systems Only Using Part 75 Missing Data Procedures (not available to Part 75 NO_x Budget Units)

06 Average Hour Before/Hour After
07 Average Hourly Heat Input Rate, Initial Missing Data
08 90th Percentile
09 95th Percentile
10 Part 75 Maximum Hourly Rate
11 Part 75 Average Hourly Concentration in Load Bin
12 Part 75 Unit or Stack MPC

NO_x Concentration Systems Only Using Default Missing Data

30 MPC (Maximum Potential Concentration) submitted in RT 530
31 MEC (Maximum Expected Concentration) submitted in RT 530

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

Field Descriptions and Instructions for NO_x Concentration Systems Reporting ONLY

Adjusted Average NO_x Concentration for the Hour. For each hour in which quality-assured measured values are obtained, apply the appropriate adjustment factor (1.0, 1.1, or system BAF) to the rounded Average NO_x Concentration for the Hour and report the adjusted NO_x concentration for the hour in ppm, also rounded to one decimal place. For each hour in which missing data procedures are used to report data, report the substituted value.

Percent Monitor Data Availability for NO_x Concentration. Report the Percent Monitor Data Availability for each hour in which missing data is substituted using Part 75 missing data procedures. You may elect to report percent monitor data availability for all

other hours, but this is optional. If you use the NO_x Budget Program missing data option to report maximum potential or expected concentration during missing data hours, it is not necessary to calculate or report percent monitor data availability, unless required to do so by the State regulatory agency.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

(3) **RT 202: CO_2 Concentration** (Acid Rain Units Only)

Part 75 NO_x budget units should report and calculate heat input rate according to the Acid Rain Program requirements. Non-Part 75 NO_x budget units report CO_2 diluent concentration values used in heat input calculations in RT 210. Do not report CO_2 concentration in RT 202.

(4) **RT 210: CO_2 Diluent Concentration**

For each hour in which CO_2 diluent is measured to determine NO_x emission rate or hourly heat input rate, report percent CO_2 in RT 210. If NO_x emission rate reported in RT 320 for the hour is a substituted value based on missing data procedures and CO_2 is <u>not</u> used to determine heat input, do not report RT 210 for the hour. For any hour in which CO_2 concentration is missing and needed for heat input calculations, calculate and report substitute CO_2 percent concentration in RT 210 using NO_x Budget Program missing data procedures.

Field Descriptions and Instructions

Monitoring System and Component ID. For each hour of measured data report the monitoring system and component ID for the CO_2 component in the NO_x emission rate system or the CO_2 component of the CO_2 system certified for heat input purposes. If the CO_2 concentration is missing for the hour and this value is needed to determine hourly heat input rate, use missing data substitution for the hour and leave the monitoring system and component ID blank.

Average CO_2 Concentration for the Hour. Report the CO_2 concentration for the hour, expressed in %, rounded to one decimal place.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the type

of monitoring system or missing data procedure used to determine CO_2 concentration for the hour.

01	Primary Monitoring System
02	Backup or Redundant Backup Monitoring System
03	Approved Part 75 Alternative Monitoring System
04	Reference Method Backup System (Method 3A)
06	Average Hour Before/Hour After
30	Maximum CO_2 During Normal Operation (from RT 531)
54	Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as unavailable hours for percent availability calculations.
55	Other substitute data approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are <u>not</u> included in missing data lookback and are included as unavailable hours for percent availability calculations.

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

% Monitor Availability for CO_2 Diluent Concentration. If you use missing data procedures based on percent monitor availability (as defined in the ***Technical Guidance***), report the % monitor availability for each hour in which missing data is substituted.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

(5) RT 211: O_2 Diluent Data

For each hour in which O_2 diluent is measured to determine NO_x emission rate or hourly heat input rate or to determine hourly moisture, report percent O_2 in RT 211. If NO_x emission rate reported in RT 320 for the hour is a substituted value based on missing data procedures O_2 must still be reported in RT 211 if it is used to calculate heat input

and/or moisture. For any hour in which O_2 concentration is missing and needed for heat input or moisture calculations, calculate and report the substitute data using the NO_x Budget Program missing data procedures.

If you use both a wet and dry O_2 analyzer (certified as part of a moisture system) to determine hourly moisture, report two O_2 diluent readings in each hour. If the dry O_2 analyzer is also part of the NO_x emission rate system, report one RT 211 using the NO_x system ID for the dry O_2 reading and another using the moisture system ID for the wet O_2 reading. Report the hourly moisture derived from these values in RT 212, as described below.

Field Descriptions and Instructions

Monitoring System and Component ID. If the O_2 component is a component of either a NO_x emission rate monitoring system or of a heat input monitoring system, then for each hour of measured data report the monitoring system and component ID for the NO_x emission rate or heat input system even if the O_2 monitor is also a component of a moisture system. Only report the monitoring system and component ID for the moisture system if the data is only used for purposes of determining moisture. If O_2 concentration is missing for the hour and missing data substituted, leave the monitoring system and component ID blank.

Average O_2 Concentration for the Hour. Report O_2 concentration for the hour, expressed in %, rounded to one decimal place.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the type of monitoring system or missing data procedure used to measure O_2 concentration for the hour.

01	Primary Monitoring System
02	Backup or Redundant Backup Monitoring System
03	Subpart E Alternative Monitoring System
04	Reference Method Backup System (Method 3A)
06	Average Hour Before/Hour After
30	Minimum O_2 during normal operation (from RT 531)
54	Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as

unavailable hours for percent availability calculations.

55 Other substitute data approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are not included in missing data lookback and are included as unavailable hours for percent availability calculations.

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

Moisture Basis of Measurement. If reported O_2 values are used to determine hourly moisture, use one of the following upper case codes to indicate the moisture basis of the O_2 reading.

W Wet
D Dry

If O_2 values are not used for moisture, you may leave this field blank.

% Monitor Availability for O_2 Diluent Concentration. If you use missing data procedures based on percent monitor availability, report the % monitor availability for each hour in which missing data is substituted.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

(6) **RT 212: Hourly Moisture Data**

For any unit or stack which requires hourly moisture measurements to determine emissions or heat input, report this value in RT 212 for each operating (or partial operating) hour. Do not report moisture values in RT 220.

If you use a moisture constant approved as part of your monitoring plan (for oil and gas-fired units only) see the instructions for RT 531 and use this constant in the calculation. Do not report RT 212.

Field Descriptions and Instructions

Component ID. If moisture is calculated from the readings of two or more components in the system, leave the component ID blank.

Monitoring System ID. If moisture is not determined using a measured value for the hour, leave the monitoring system (and component ID) blank.

Average Moisture Content for the Hour. Report the measured moisture for the hour, expressed in %H20, rounded to one decimal place.

Formula ID: If hourly moisture is calculated from the readings of two or more components in the moisture system, enter the formula ID from RT 520 which represents this calculation. If moisture is provided by a single moisture component, leave this field blank and provide the component ID in the component ID field.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the type of monitoring system or missing data procedure used to determine hourly moisture.

01 Primary Monitoring System
02 Backup or Redundant Backup Monitoring System
03 Part 75 Alternative Monitoring System
04 Reference Method Backup System (Method 3A)
06 Average Hour Before/Hour After
30 Minimum Moisture (from RT 531 or zero)
54 Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as unavailable hours for percent availability calculations.
55 Other substitute data approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are <u>not</u> included in missing data lookback and are included as unavailable hours for percent availability calculations.

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

Percent Monitor Data Availability for Moisture. If you use missing data procedures based on percent availability, calculate and report the annual moisture percent data availability for each hour in which missing data is substituted.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

(7) **RT 220: Stack Flow Data**

If you use stack flow monitoring to determine hourly heat input rate or NO_x mass emissions, report RT 220 for each operating hour (or partial operating hour).

Field Descriptions and Instructions

Component ID. If you determine hourly stack flow by averaging (or subtracting) the readings from two flow components (which are identified as components of a single monitoring system) leave this field blank. If flow rate is not determined using a measured value for the hour leave this field blank.

Monitoring System ID. If flow rate is not determined using a measured value for the hour leave this field blank.

Percent Monitor Data Availability for Flow. Report the Percent Monitor Data Availability for each hour in which missing data is substituted using Part 75 missing data procedures. You may elect to report percent monitor data availability for all other hours, but this is optional. If you use the NO_x Budget Program missing data option to report maximum potential flow for all missing data hours, do not calculate or report monitor availability, unless required to do so by the State regulatory agency.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

Average Volumetric Flow Rate for the Hour. For each operating hour (or partial operating hour) in which a quality assured flow rate is measured (MODC 01-04), report the flow rate in units of SCFH (wet basis). Flow should be reported to a precision of 1000 SCFH. For missing data hours, leave this field blank.

Average Volumetric Flow Rate for the Hour Adjusted for Bias. For each hour in which measured data is obtained, apply the appropriate adjustment factor (1.0 or BAF) to the value and report the adjusted stack flow for the hour. Flow should be reported to a precision of 1000 SCFH. For each hour in which missing data procedures are used to report data, report the substituted value. Do not leave this field blank.

Load Range. If you use Part 75 missing data procedures, report load range for each operating hour. If you use a maximum potential flow for all missing data hours, you may leave this field blank.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the flow monitoring system or missing data procedure used to report hourly stack flow.

01	Primary Monitoring System
02	Backup or Redundant Backup Monitoring System
03	Part 75 Alternative Monitoring System
04	Reference Method Backup System (Method 2)
05	Part 75 Approved Parametric Method
06	Part 75 Average Hour Before/Hour After
07	Part 75 Average Hourly Flow Rate, Initial Missing Data
08	Part 75 90th percentile
09	Part 75 95th percentile
10	Part 75 Maximum flow rate
11	Part 75 Average flow rate in load bin
12	Part 75 Unit or Stack MPF
30	NBP Unit or Stack MPF (from RT 530)
54	Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as unavailable hours for percent availability calculations.
55	Other substitute data approved through petition by EPA (if data are submitted for both the NO_x

Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are not included in missing data lookback and are included as unavailable hours for percent availability calculations.

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

(8) **RT 300: Operating Data**

Report hourly heat input rate, operating time, load (expressed either as megawatts or steam) and load ranges for each hour for each location at which emissions are measured in the program except as follows:

- Load bins should be reported only if the missing data procedures or long term fuel flow apportionment methodology requires this information.
- For units using maximum hourly heat input and a default NO_x emission rate to determine NO_x mass emissions, it is not necessary to report hourly heat input and RT 300 is not necessary. Report unit operating time hourly in RT 328.
- If heat input rate is measured and reported at a common stack or pipe, also apportion and report it at the unit level if it is required by your state for purposes of allocation or reallocation. This apportionment should be based on either megawatts or steam flow using formula F-20A or F-20B, as applicable.
- For multiple stacks or pipes sum the heat input to the unit level using formula F-20-C if it is needed to support your NO_x mass calculations or if it is required by your state for purposes of allocation or reallocation.

Field Descriptions and Instructions

Unit Operating Time. Enter "0.25", "0.50", "0.75 or 1.00" to indicate the number of quarter hours in which the unit combusted any fuel or the stack or pipe was used during the hour. Round up to the nearest quarter hour. Alternatively, you may indicate the actual portion of the hour in which fuel was combusted to to a precision greater than a quarter of an hour, but no greater than a one hundredth of an hour.

A stack is considered not to be operating if no emissions passed through the stack during the hour. For example, in a multiple stack configuration report 0.00 for unit operating

time in RT 300 for the multiple stack for any hour in which the damper to the stack is completely closed.

If one stack (for example, a multiple stack) was not used at all during the reporting period, but the associated unit operated during the period, it is not necessary to report hourly RT 300s for the stack. (RT 307 for the stack must indicate zero emissions and operating hours in the period.)

Gross Unit Load and Steam Load During Unit Operation. Report hourly load information as either steam load or unit load in megawatts. Leave the other load field blank. If you have converted steam to MWe equivalent and added that value to megawatts for a gas turbine, you should report the unit load and leave the steam load field blank.

The units for average hourly gross unit load are MWe, and for steam flow rate are thousand lbs/hr (1 Klbs =1,000 lbs). Do not correct steam load for standard temperature and pressure. Use steam load at measured temperature and pressure (see Part 75, Appendix C, Section 2.2.1).

Operating Load Range Corresponding to Gross Load During Unit Operation. If you use Part 75 based missing data procedures for either CEMS or fuel flow under Appendix D, report an operating load range for each operating hour. If you do not use Part 75 missing data, leave this field blank. The operating load range should correspond to the average hourly gross load.

Hourly Heat Input Rate During Unit Operation for All Fuels. Report this value in mmBtu/hr. If you use CEMS, calculate the hourly rate using the diluent value, adjusted hourly stack flow rate and F-factor.

Heat Input Formula ID. If you use a diluent analyzer and stack flow monitoring to measure hourly heat input rate report the formula ID used to calculate heat input rate for the hour. For non-CEMS methodologies, leave this field blank.

F-factor for Heat Input Calculation. If you use CEMS or another F-factor based methodology to determine hourly heat input rate, report the F-factor used for each hour of operation (or partial operation). Otherwise, leave this field blank.

Use of Diluent Cap for Heat Input Calculation in the Hour. If you elect to substitute a maximum or minimum diluent value for hours in which the measured diluent is

below or above the specified limit, indicate the use of the diluent cap value by entering a "Y." Leave blank for all hours in which the diluent cap is not used.

(9) **RT 301: Quarterly Cumulative Emissions Data (Acid Rain Program)**

This record is designed for the reporting of quarterly and cumulative annual SO_2 mass emissions, NO_x emission rate, CO_2 emissions and heat input under Part 75. In some cases, States may request and sources may agree to the reporting of SO_2 information in the quarterly report for non-Part 75 units. Non-Part 75 NO_x budget units should not report information in this record unless specifically requested to do so for a purpose agreed upon with the State regulatory agency.

(10) **RT 302: Oil Fuel Flow**

For each operating (or partial operating) hour during which oil is combusted for a unit calculating heat input rate based on fuel flow, report RT 302 for the unit or common pipe serving the unit. If more than one type of oil is combusted in the same hour and they are measured by different fuel flow systems, report more than one RT 302 for the hour for the unit or pipe. It is not necessary to report RT 302 for other hours in which the unit operated, if only other fuels were burned.

The flow rate is the net fuel flow to the unit or units. For example, it may represent the difference between the values measured for the main supply and recirculating oil.

Field Descriptions and Instructions

Monitoring System ID. For hours in which the fuel flow system provides measured data, report the monitoring system ID for the OILM or OILV system. For any hour in which long term fuel flow is apportioned over a longer measurement period, report the long term fuel measurement system ID. Leave the monitoring system ID blank for any hour in which substitute data or maximum flow rate is used or in which emergency or ignitor oil is combusted.

Mass Flow Rate of Oil. This value is either measured directly by a fuel flowmeter system or calculated from volumetric flow rate measured by a fuel flowmeter system. All values must be reported in lb/hr. This value represents an hourly rate for the period in which fuel is combusted, not total flow for the hour.

Acid rain units using Appendix D must report mass flow rate in order to calculate SO_2 mass emissions. Where the density of the oil is determined by the applicable ASTM procedures in

Appendix B to the Technical Guidance, use equation D-3 to calculate the mass of oil consumed (in lb/hr).

$$M_{oil} = V_{oil} \times D_{oil}$$

where,

M_{oil} = Mass of oil consumed per hr, lb/hr (RT 302, column 21)
V_{oil} = Volume of oil consumed per hr, measured in scf, gal, barrels, or m^3 (RT 302, column 59)
D_{oil} = Density of oil, measured in lb/scf, lb/gal, lb/barrel, or lb/m^3 (RT 302, column 75)

However, non-Part 75 NO_x budget units may measure and report either mass flow or volumetric flow of oil. If you use volumetric flow and GCV to determine hourly heat input rate, leave this field blank.

Missing Data/Source of Data Code for Mass Oil Flow Rate. Enter one of the following codes to indicate the type of value reported for oil flow rate:

0 Measured Data
1 Substitute Data Using Load-Based Procedures
2 Mass from Volumetric Measurement
3 Maximum Fuel Flow Rate (Missing Data Purposes Only. This value should also be used for NBP sources using Long Term Fuel Flow missing data procedures)
4 Emergency Fuel
5 Ignitor Oil From Tank Measurements
6 Uncertified OFFM to Measure Ignitor Oil
8 Prorated Long Term Mass Fuel Measurement (NBP Only)

Do not leave this field blank if fuel flow is reported in lb/hr.

Operating Load Range. If you use fuel flow missing data procedures based on Part 75, Appendix D, report an operating load range for each hour. During hours when you report measured values, use the load ranges to define the values at each load range for missing data purposes. During hours of fuel flow missing data use the load ranges to define the appropriate substitute value.

For common pipes, you may use load ranges of 1 - 10 or 1 - 20; for fuel flow measured at single units use load ranges of 1-10.

If you use maximum hourly fuel flow rate for the type of fuel combusted for missing data purposes, leave this field blank.

Gross Calorific Value of the Oil. Report the heat content or gross calorific value (GCV) of the oil from the appropriate sample to calculate heat input. If GCV is missing report a substitute value based on NO_x Budget Program or Part 75 missing data procedures. Report this value in units consistent with the units used to report the mass or volumetric flow of oil as described below.

Source of Data Code for GCV. Identify the source of the GCV value for the hour using one of the following codes:

0	Measured Value
1	Missing Data

Do not leave this field blank.

Heat Input Rate from Oil for the Hour. Calculate and report heat input rate to the unit or common pipe from oil by multiplying the heat content (GCV) of the fuel by the hourly oil mass flow rate or the volumetric flow rate. Report this value in units of mmBtu/hour rounded to one decimal place.

Fuel Usage Time. Report the portion of the hour during which the unit(s) combusted this type of oil as 0.25, 0.50, 0.75 or 1.00. Always round up the actual operating hour fraction to the appropriate fraction of the hour. Alternatively, you may indicate the actual portion of the hour in which fuel was combusted to a precision greater than a quarter of an hour, but no greater than a one hundredth of an hour (0.01 - 1.00). Do not leave this field blank.

Type of Oil. Identify the type of oil combusted using the following codes:

DSL	Diesel Oil
OIL	Residual Oil
OOL	Other Oil

If more than one type of oil is combusted in a single hour and you measure the oil flows using different fuel flow systems, report a separate set of RTs 302 for each hour and fuel type.

Volumetric Flow Rate of Oil for the Hour. If the fuel flow system measures the volumetric flow of oil, report the volumetric flow, as measured. Part 75 NO_x budget units

must report both the volumetric and mass flow, as calculated based on the volume of oil. If the fuel flow system measures mass of oil directly, leave blank columns 59 through 88 in RT 302.

Units of Measure for Volumetric Oil Flow Rate. Identify the units of measure used to report volumetric flow rate using the following codes:

Volumetric Oil Flow Rate Units

BBLHR	Barrel/hour
GALHR	Gallons/hour
M3HR	Cubic meters/hour
SCFH	Standard cubic feet/hour

If you calculate hourly heat input directly from the volumetric flow, be sure to use corresponding units for gross calorific value of the fuel, as follows:

GCV Units

BTU/SCF	Btu per standard cubic foot
BTU/GAL	Btu per gallon
BTU/BBL	Btu per barrel
BTU/M3	Btu per cubic meter
BTU/LB	Btu per pound (must be used for all Part 75 NBP units)

Source of Data Code for Volumetric Oil Flow Rate. Use one of the following codes to indicate the type of value reported for oil flow rate:

0	Measured Data
1	Substitute Data Using Load Based Procedures
3	Maximum Hourly Flow Rate (Missing Data Purposes Only. This value should also be used for NBP sources using Long Term Fuel Flow missing data procedures.)
4	Emergency Fuel
5	Ignitor Oil From Tank Measurements
6	Uncertified OFFM to Measure Ignitor Oil
7	Prorated Long term Volumetric Fuel Measurement (NBP Only)

If you measure and report volumetric flow rate, do not leave this field blank.

Density of Oil. If you measure volumetric flow of oil for a Part 75 NO_x budget unit, you must sample and report the density of oil used to calculate the mass flow of oil. If you have a non-Part 75 NO_x budget unit and you calculate hourly heat input rate using volumetric fuel flow, it is not necessary to sample and report density. You may leave this field blank.

Units of Measure for Density of Oil. If you sample and report density of the oil, identify the units of measure for density. The units must correspond to the units of measure for oil flow rate reported at column 69 as follows:

Oil Flow Rate Units	Density of Oil Units	
BBLHR	LBBBL	Pounds per barrel
GALHR	LBGAL	Pounds per gallon
M3HR	LBM3	Pounds per cubic meter
SCFH	LBSCF	Pounds per standard cubic feet

If you report density of oil, do not leave this field blank.

Source of Data Flag for Density of Oil. Enter one of the following codes to indicate the source of the density of oil values reported:

0	Measured Value from Same Sample as GCV Value
1	Missing Data

If you report density of oil, do not leave this field blank.

Flag to Indicate Multiple or Single Fuel Types Combusted. If you use Part 75 Appendix D missing data procedures, you must indicate for each hour whether only oil was burned or whether other types of fuel were burned during the same hour. Report an "S" for hours during which only one type of fuel was combusted. Report an "M" for hours during which multiple fuels were combusted.

If information on the types of fuel combusted is missing, report an "M" for multiple fuels.

(11) **RT 303: Gas Fuel Flow**

For each operating (or partial operating) hour during which natural gas is combusted for a unit calculating heat input based on fuel flow, report RT 303 for the unit or common pipe serving the unit(s). If more than one type of gas is combusted in the hour and it is measured by different fuel flow systems, report more than one RT 303 for the hour

for the unit or pipe. It is not necessary to report RT 303 for other hours in which the unit operated, if only other fuels were burned.

Field Descriptions and Instructions

Monitoring System ID. For hours in which the fuel flow system provides measured data, report the monitoring system ID for the Gas system. For any hour in which long term fuel flow is apportioned over a longer measurement period, report the long term fuel measurement monitoring system ID. Leave the monitoring system ID blank for any hour in which substitute data is used.

Flow Rate of Gas. For Appendix D certified gas systems, this value is measured directly by the fuel flowmeter system. The flow rate is the net fuel flow to the unit or units. For example, it may represent the sum of gas flow for two fuel flowmeters measuring gas to the unit. All values must be reported in 100 standard cubic feet per hour (100 scfh) to one decimal place. This value represents an hourly rate for periods in which the fuel is combusted, not a total flow for the hour. For long term fuel flow measurements, this is the volume of gas apportioned to the hour from the long term measurement.

Source of Data Code for Gas Flow Rate. Enter one of the following codes to indicate the source of the value for gas flow rate.

0	Hourly Measurement
1	Substitute Data Using Load Based Procedures
3	Maximum Fuel Flow Rate (Missing Data purposes only. This value should also be used for NBP sources using Long Term Fuel Flow missing data procedures.)
7	Prorated Long Term Fuel Measurement (NBP Only)

Do not leave this field blank.

Operating Load Range. If you use fuel flow missing data procedures based on Part 75, Appendix D, you must report an operating load range for each hour. During hours when you report measured values, use the load ranges to define the values at each load range for missing data purposes. During hours of fuel flow missing data use the load ranges to define the appropriate substitute value.

For common pipes, you may use load ranges of 1 - 10 or 1 - 20. For fuel flowmeters serving a single unit, use load ranges of 1 - 10.

If you elect to use maximum hourly fuel flow rate for missing data purposes, you may leave this field blank.

Gross Calorific Value of the Gas. Report the heat content or gross calorific value of the gas from the appropriate sample to calculate heat input. Report this value in units of Btu/100 scf.

Source of Data Code for GCV. Identify the source of the value for GCV using the following codes:

0	Measured Sample
1	Missing Data

Do not leave this field blank.

Heat Input Rate from Gas During Gas Combustion. Calculate and report hourly heat input rate to the unit or common pipe from gas by multiplying the heat content of the gas sample by the hourly gas flow rate. Report this value in units of mmBtu/hour rounded to one decimal place.

Fuel Usage Time. Report the portion of the hour during which the unit(s) combusted gas as 0.25, 0.50, 0.75 or 1.00. Round up to the nearest quarter hour. Alternatively, you may indicate the actual portion of the hour in which fuel was combusted to a precision greater than a quarter of an hour, but no greater than a one hundredth of an hour (0.01 - 1.00).

Type of Gas. Identify the type of gas combusted using the following codes:

LPG	Liquefied Petroleum Gas
PNG	Pipeline Natural Gas
PRG	Process Gas
OGS	Other Gas

If more than one type of gas is combusted in a single hour, you must measure gas flow using a different fuel flow system and report a separate set of RTs 303 for each hour and fuel type.

Flag to Indicate Multiple or Single Fuel Types Combusted. If you use Part 75 Appendix D missing data procedures, you must indicate for each hour whether only gas was burned or whether other types of fuel were burned during the same hour. Report an "S" for hours during which only one type of fuel was combusted. Report an "M" for hours during which multiple fuels were combusted.

If information on the types of fuel combusted is missing, report an "M" for multiple fuels.

(12) **RT 306: Long Term Fuel Flow Measurements** (Non-Part 75 NO_x Budget Units Only)

If you elect to use a default NO_x emission rate and apportion long term fuel flow to determine hourly heat input and hourly NO_x mass emissions for a unit, report each period for which fuel is measured in RT 306. For oil, apportion volume of oil (if applicable) to column 59 and mass of oil (if applicable) to column 21 in RT 302. Apportion volume of gas to column 21 of RT 303.

Field Descriptions and Instructions

Monitoring System ID. Report the monitoring system ID for the long term fuel flow system, as defined in RT 510.

Type of Fuel. Identify the type of fuel combusted using the following codes:

DSL	Diesel Oil
LPG	Liquefied Petroleum Gas
OGS	Other Gas
OIL	Residual Oil
OOL	Other Oil
PNG	Pipeline Natural Gas
PRG	Process Gas

Please note that if more than one type of fuel is combusted, you must measure the fuel using a different fuel flow system and report more than one RT 306 for the appropriate time period.

Period Begin and End Date and Hour. Identify the first and last hour of the time period represented by the long term fuel measurement. The time period should not include any hours of unit operation outside of the ozone season.

Quantity. Report the total amount of fuel measured during the period, rounded to the nearest whole number.

Units of Measure. Identify the units of measure used to report long term fuel flow using one of the following codes:

<u>For mass of oil:</u>

LB Pounds

<u>For volume of oil:</u>

BBL	Barrels
GAL	Gallons
M3	Cubic meters
SCF	Standard cubic feet

For gas:

HSCF	100 standard cubic feet

Operating Hours in Period. Calculate and report the number of hours in which operation occurred during the period. Count each partial unit operating hour as you would a full hour.

Measurement Method Code. Enter one of the following codes to indicate the type of periodic measurement. Additional codes may be obtained from your State regulatory agency (in consultation with EPA's Acid Rain Division).

PUR	Fuel Purchase Records
TNK	Tank Measurements

(13) **RT 307: NO_x Budget Program Cumulative Emissions Data**

For each reporting period, submit RT 307 for each pipe, stack and unit at which NO_x mass emissions are measured or estimated. If you monitor rate at a common stack or pipe, it is not necessary to apportion NO_x mass emissions to the unit level, but it may be necessary to apportion and report rate at the unit level depending upon your state's allocation/reallocation methodology. You must also report summed NO_x mass emission values and heat input values for individual units associated with multiple stacks or pipes. For example, if NO_x emission rate and flow are measured at a common stack (CS1) serving units 1 and 2, report one RT 307 for CS1 with all fields completed and one RT 307 each for units 1 and 2 containing all fields except for the NO_x mass information in fields 28-47. If NO_x rate and flow are measured at a main stack (MS1) and bypass stack (MS2) for unit 1, report complete RTs 307 in the quarterly report for MS1, MS2, and unit 1.

For non-Part 75 NO_x budget units, report only RTs 307. For Part 75 NO_x budget units, report RTs 301 for Acid Rain purposes and RTs 307 for the NO_x Budget Program.

If a unit does not operate during a reporting period, report RT 307 indicating zero NO_x mass emissions and zero operating hours in the period.

To calculate quarterly, ozone season and yearly NO_x mass emissions, use the following equation:

$$M_{NO_{x\,time\ period}} = \frac{\sum_{h=1}^{p} M_{NO_{x\,h}}}{2000}$$

(Eq. F-10C)

$M_{NOx(time\ period)}$ = NO_x mass emissions in tons for the given time period (quarter, ozone seasons, year).

$M_{NOx(h)}$ = NO_x mass emissions in lbs for the hour (as reported in RT 328)

Field Descriptions and Instructions

Date of Report Generation. Provide the date on which the file was created.

Reporting Period NO_x Tons Emitted. Report the sum of the actual NO_x mass emissions for the reporting period using Formula 10-C. Do not use the sum of unrounded values stored in your DAHS. Round the sum to one decimal place. If you have a non-CEMS NO_x budget unit and report only second and third quarter emissions, the second quarter report will include the sum of emissions from May and June and the third quarter report will include the sum of the emissions from July, August and September.

Cumulative Ozone Season NO_x Tons Emitted. Report the sum of the actual NO_x mass emissions for the ozone season through the end of the quarter. For the second quarter report this will include the total NO_x mass emissions for May and June. For the third quarter report, this value will be the total NO_x mass emissions from May through September.

Reporting Period Heat Input. Report the sum of the actual hourly heat input rates reported in RT 300 for the unit, stack or pipe, adjusted for operating time for the current reporting period.

Cumulative Ozone Season Heat Input. If required to do so by State regulations or by the State regulatory agency, report the sum of the actual hourly heat input reported in RT 300 for the unit, stack or pipe, adjusted for operating time, for the ozone season.

Reporting Period Operating Hours. Report the total number of hours in which operation occurred during the reporting period. Count each partial hour as a whole hour.

Cumulative Ozone Season Operating Hours. Report the cumulative number of hours in which operation occurred during the ozone season through the end of the quarter. For the second quarter report this will include the total operating hours for May and June. For the third quarter report this will include the total operating hours from May through September. Count each partial hour as a whole hour.

(14) RTs 310, 313 and 314 for SO_2 Mass Emissions

These record types in the EDR are designed for the reporting of SO_2 mass emissions. In some cases, States may request and sources may agree to the reporting of SO_2 information in the quarterly report. Do not report information for non-Part 75 NO_x budget units in this record unless specifically requested to do so for a purpose agreed upon with the State regulatory agency. For more information, see the EDR instructions for the Acid Rain Program.

(15) RT 320: NO_x Emission Rate Data

If you are using a NO_x emission rate system to measure NO_x emission rate, report RT 320 for each hour (or partial hour) in which the unit or stack operates. For hours in which the unit or stack did not operate, do not report RT 320.

For non-Part 75 units, for hours in which you report NO_x mass emissions using a NO_x concentration system and flow system, do not report RT 320. For purposes of determining percent monitor data availability of a NO_x emission rate system, treat this hour as you would a non-operating hour, so that it has no impact on the percent monitor availability and is not used for look back purposes.

Field Descriptions and Instructions

Monitoring System ID. Report the monitoring system ID for the NO_x emission rate system providing measured data. For missing data hours, leave this field blank.

Percent Monitor Data Availability for NO_x Emission Rate. Report Percent Monitor Data Availability for each hour in which missing data is substituted using Part 75 missing data procedures. You may elect to report percent monitor data availability for all other hours, but this is optional. If you elect to use the NO_x Budget Program missing data option to report maximum NO_x emission rate

(MER) during all missing data hours, it is not necessary to calculate or report monitor availability, unless required to do so by the State regulatory agency.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

F-factor Converting NO_x Concentration to Emission Rate. Report the F-factor used to calculate NO_x emission rate for the hour. For missing data hours, this field may be blank.

Average NO_x Emission Rate for the Hour. Calculate and report the NO_x emission rate based on the measured data reported in RTs 201 and 210 or 211. For hours in which missing data procedures are used leave this field blank.

Adjusted Average NO_x Emission Rate for the Hour. For each hour in which measured data is obtained and an average NO_x emission rate calculated and reported, apply the appropriate adjustment factor (1.0, 1.1 or the BAF) to the value and report the adjusted NO_x emission rate for the hour. For each hour in which missing data procedures are used to report data, report the substituted value. Do not leave this field blank.

Load Range. If you use load-based missing data procedures, report the load range (consistent with RT 300) for each operating hour. If you elect to use the NO_x Maximum Emission Rate (MER) for all missing data hours, you may leave this field blank.

Formula ID. Report the appropriate Formula ID from RT 520 for the NO_x emission rate calculation. For missing data hours you may leave this field blank or continue to report the Formula ID in use before the missing data period.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the monitoring system or missing data procedure used to report hourly stack flow.

01 Primary Monitoring System
02 Backup or Redundant Backup Monitoring System
03 Approved Part 75 Alternative Monitoring System
04 Reference Method Backup System

05	Part 75 Approved Parametric Method
06	Average Hour Before/Hour After
07	Average Hourly Heat Input Rate, Initial Missing Data
08	90th Percentile
09	95th Percentile
10	Part 75 Maximum Hourly Rate
11	Part 75 Average Hourly Rate in Load Bin
12	Part 75 Unit or Stack MER
14	Diluent CAP (If the cap is replacing a CO_2 measurement it should be 5.0% for boilers and 1.0% for turbines; if it is replacing an O_2 measurement it should be 14.0% for boilers and 19.0% for turbines)
30	NBP Unit or Stack MER
54	Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as unavailable hours for percent availability calculations.
55	Other substitute data approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are <u>not</u> included in missing data lookback and are included as unavailable hours for percent availability calculations.

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

(16) RT 323: NO_x Emission Rate Based on Appendix E Testing (Multiple Fuel Testing Only)

If you have a non-Part 75 NO_x budget unit which uses a consistent mix of fuels and Appendix E testing was performed for this mix of fuels, use RT 323 to report the average NO_x emission rate for the hour for these combined fuels. If individual fuel testing was performed, report NO_x emission rate in RT 324, as described below.

Part 75 NO_x budget units may continue to report Appendix E NO_x emission rates in RT 323, until required to do otherwise by the Acid Rain Program or by a State regulatory agency.

Field Descriptions and Instructions

Monitoring System ID. Enter the monitoring system ID for the NO_x system defined in RT 510 for Appendix E. This system should only contain a DAHS component.

Parameters Status Flag. Enter one of the following codes:

Y	Designated operational and control equipment parameters within normal limits
N	Parameter is outside of normal limits
W	Operation above highest tested heat input rate point on the curve
Z	Operation below lowest tested heat input rate point on the curve
X	Parameter data missing or invalid

(For missing fuel flow rate and missing gross calorific value data, use the missing data procedures in Appendix D. Do not indicate an "N" for the parameter status flag unless a parameter is outside of normal limits.)

Use missing data procedures for any hour in which an "N" is indicated. When excess O_2 exceeds by more than 2.0 percentage points O_2 the excess O_2 value recorded at the same operating heat input rate as during the last NO_x emission rate test, substitute the highest tested NO_x emission rate on the curve for the fuel. Between heat input rate points that were actually tested, make a linear interpolation of the excess O_2. Below the lowest heat input rate point do not keep track of the excess O_2.

For missing or invalid excess O_2 data, substitute the highest NO_x emission rate on the curve for the fuel. However, report a parameter status flag value of "X" in column 21. This indicates that the hour is not demonstrated to be within the specified limits in section 2.3 of Appendix E, but it also is not demonstrated to be outside the specified limits. (Note that the use of the X flag is optional, you may choose instead to treat these hours as out of spec.) Note that hours marked with a flag of "N" count towards the 16 consecutive unit operating hours before retesting is required, while hours marked with a flag of "X" do not count for this purpose. However, in either case, the data count against the availability of data where the unit operates within the parameters. If the data availability falls below 90.0 percent, the Agency may require retesting.

Note that the same procedures apply when a quality assurance/quality control parameter other than excess O_2 is

missing (e.g., steam/fuel injection ratio, compressor ratio).

If the hourly heat input rate is higher then the maximum heat input rate correlated on the curve, report a "W" for the parameter status flag. Calculate the maximum potential NO_x emission rate and calculate the NO_x emission rate that would result from extrapolating the last two heat input points on the correlation curve. Substitute the higher of these two values. During your next periodic or quality assurance/ quality control related testing, try to test under conditions more representative of your maximum potential heat rate. If possible, use the new maximum heat input rate as the highest heat input point.

If the hourly heat input rate is below the lowest heat input rate it is not necessary to verify that the operational parameters are within any specified limits. Enter a "Z" in the parameter status flag and report the same NO_x emission rate recorded during testing at the lowest heat input rate.

If the NO_x versus heat input rate curve is not complete, then use the maximum potential NO_x emission rate and complete your testing as soon as possible. Calculate the maximum potential NO_x emission rate using the maximum potential concentration of NO_x, as specified in section 2.1.2.1 of Appendix A, and the minimum carbon dioxide concentration (historical information or value of 5.0%) or maximum oxygen concentration (historical information or value of 14.0%).

Average NO_x Emission Rate for the Hour (Combined Fuels). Using the appropriate segment of the heat input/NO_x emission rate curve reported in RT 560 or formula submitted in RT 520, determine the hourly NO_x emission rate for the unit. Report this rate to three decimal places.

Average NO_x Emission Rate for the Hour for Oil (ARP only). This field is reserved for use by Part 75 units.

Average NO_x Emission Rate for the Hour for Gas (ARP only). This field is reserved for use by Part 75 units.

Segment ID of Correlation Curve. Enter the Segment ID from RT 560 for the correlation curve used to determine NO_x emission rate for the hour. For Part 75 units, you may leave this field blank if Table C of the Monitoring Plan contains appropriate Appendix E formulas.

(17) RT 324: NO_x Emission Rate Estimation Based on Appendix E

If you performed Appendix E testing for individual fuels, estimate the hourly NO_x emission rate using a heat input rate correlation curve as defined in Part 75, Appendix E, and submit RT 324 for each hour of operation (or partial operation) and fuel combusted in the hour.

Field Descriptions and Instructions

NO_x Monitoring System ID. Enter the monitoring system ID for the NO_x system defined in RT 510 for Appendix E. This system should only contain a DAHS component.

Fuel Flow Monitoring System ID. Identify the OILV, OILM or GAS monitoring system ID used to measure fuel flow for the hour. This fuel measurement is used to determine the rate which is the basis for the emission rate correlation.

Parameters Status Flag. Enter one of the following codes:

Y	Designated operational and control equipment parameters within normal limits
N	Parameter is outside of normal limits
W	Operation above highest tested heat input rate point on the curve
Z	Operation below lowest tested heat input rate point on the curve
X	Parameter data missing or invalid

Use missing data procedures for any hour in which an "N" is indicated. For more information, see the instructions for RT 323 above.

Average NO_x Emission Rate for the Hour for Fuel Type. Using the appropriate segment of the heat input/NO_x emission rate curve, determine the hourly NO_x emission rate for the unit. Report this rate to three decimal places.

Average NO_x Mass Emissions from this Fuel. Calculate and report the hourly NO_x mass emission rate associated with this type of fuel. Round to two decimal places.

Segment ID of Correlation Curve. Enter the Segment ID from RT 560 for the correlation curve used to determine NO_x emission rate for the hour.

Flag to Indicated Multiple or Single Fuel Types Combusted. If you use Part 75 Appendix E to determine NO_x emission rate, you must indicate for each hour whether

more than one type of fuel was burned during the hour. Report an "S" for hours during which only one type of fuel was combusted. Report an "M" for hours during which multiple fuels were combusted.

(18) RT 325: NO_x Emission Rate Estimation Based on Appendix E for Multiple Fuel Hours

For a NO_x budget unit which is subject to an hourly NO_x emission rate limit and is required to determine and report an hourly NO_x emission rate by the State regulatory agency, report RT 325 for every hour in which more than one type of fuel is combusted. Calculate the NO_x emission rate for the hour based on the heat input weighted average NO_x emission rates for each fuel.

(19) RT 328: Hourly NO_x Mass Emissions

For each unit, stack or pipe at which NO_x mass emissions are measured, or estimated, submit RT 328 for every hour in the reporting period that the unit or stack operates. In addition, if you do not report RT 300 because you use a default for both NO_x emission rate and heat input, also report RT 328 for each hour of non-operation indicating that the unit or stack is not operating. However, if there are no hours of operation for a given unit or stack in a reporting period, it is not necessary to report hourly RTs 328 for that unit or stack. See the instructions for RT 307.

Field Descriptions and Instructions

Unit Operating Time. Enter "0.25", "0.50", "0.75 or 1.00" to indicate the number of quarter hours in which the unit combusted any fuel or the stack or pipe was used during the hour. Round up to the nearest quarter hour. Alternatively, you may indicate the actual portion of the hour in which fuel was combusted to a precision greater than a quarter of an hour, but no greater than a one hundredth of an hour.

For units using both heat input and NO_x emissions rata default values, indicate non-operating hours during the quarter by reporting "0.00" as the unit operating time.

NO_x Mass Emissions Rate During Unit Operation. This is an optional field. If you elect to use it, report the NO_x mass emissions rate in pounds per hour. Round to one decimal place.

If it is not possible to determine a single NO_x mass emissions rate for the hour (for example, if two fuels were combusted for different portions of the hour and you are using Appendix E), you may leave this field blank.

Total NO_x Mass Emissions for the Hour. Report the total hourly NO_x mass emissions for the hour. Round to one decimal place. Do NOT leave this field blank for any operating hour.

Formula ID from Monitoring Plan. Report the formula ID from RTs 520 which is used to calculate actual NO_x mass emissions for this hour.

NO_x Methodology. Use one of the following codes to indicate the measurement methodology used to report NO_x mass emissions during the hour:

AE-GAS	Appendix E Gas Curve
AE-MIX	Appendix E Mixed Fuels
AE-OIL	Appendix E Oil Curve
GDEF-GAS	Generic Default for Gas
GDEF-OIL	Generic Default for Oil
NOXM-AMS	NO_x Concentration (Part 75 Subpart E, AMS) and Stack Flow
NOXM-CEMS	NO_x Concentration and Stack Flow
NOXR-AMS	NO_x Emission Rate AMS (Part 75 Subpart E, AMS)
NOXR-CEMS	NO_x Emission Rate CEMS
UDEF-GAS	Unit-Specific Default for Gas
UDEF-OIL	Unit-Specific Default for Oil

Heat Input Methodology. Use one of the following codes to indicate the measurement methodology used to report heat input used as the basis for determining NO_x mass emissions during the hour:

CEMS	Diluent and Stack Flow CEMS
ALTHI	Alternative Heat Input Methodology Approved by State
AMS	AMS approved under Part 75 Subpart E
FF-GAS	Appendix D Gas Flow
FF-MIX	Appendix D Mixed Fuel
FF-OIL	Appendix D Oil Flow
MHHI	Maximum Hourly Heat Input Capacity

(20) RTs 330 and 331: CO_2 Mass Emissions

These record types are designed for the reporting of CO_2 mass emissions required under the Acid Rain Program. For more information, see the EDR instructions for the Acid Rain Program.

(21) RT 350: Hourly Heat Input Data for Alternative Heat Input Methods

If you have received State approval for the use of an alternative heat input methodology, the petition and approval may have specified use of RTs 350, 351 or 352 to report hourly heat input using these alternative methods. Do not use these record types for any generally approved heat input methodology such as CEMS or Appendix D fuel flow methodologies.

Field Descriptions and Instructions

Component ID. In some cases where there is no specific component associated with the hourly heat input measurement, and as specified in the petition and approval, it may be appropriate to leave this field blank.

Monitoring System ID. For all hours in which measured data is reported, report the monitoring system ID as defined in RT 510 for the alternative heat input system.

Percent Availability for Heat Input Calculations. If you are using Part 75 missing data procedures, determine annual availability per Part 75. If you are not using Part 75 missing data procedures or any other missing data procedure requiring availability and if there is no availability requirement imposed in the petition and approval, leave this field blank.

You must begin accounting for percent monitor availability on July 1, 1998. If your monitors are not provisionally certified by this date you must reset your monitor availability on May 1, 1999, hour 0 or (if you prefer) on the date of provisional certification if it is earlier than May 1, 1999 hour 0).

Hourly Heat Input Rate. For each hour (or partial hour) in which the unit or stack operated, report the heat input rate for the hour, expressed in million Btu per hour, rounded to one decimal place.

Method of Determination Code. Use one of the following method of determination codes (MODC) to identify the type of monitoring system used to measure heat input for the hour.

05	Approved Alternative Heat Input Methodology
06	Average Hour Before/Hour After
07	Average Hourly Heat Input Rate, Initial Missing Data
08	90th Percentile

09	95th Percentile
10	Maximum Heat Input Rate
11	Average Heat Input Rate in Load Bin
12	Unit or Stack Maximum Heat Input Capacity
30	Maximum Heat Input Capacity (from RT 531)
54	Other quality assured methodologies approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are included in missing data lookback and are included as unavailable hours for percent availability calculations.
55	Other substitute data approved through petition by EPA (if data are submitted for both the NO_x Budget Program and EPA) or by the State (if submitted solely for purposes of the NO_x Budget Program). These hours are <u>not</u> included in missing data lookback and are included as unavailable hours for percent availability calculations.

EPA has reserved codes 1-55; codes for 56-99 may be used by vendors and companies for other purposes.

(22) RT 351: Supplementary Heat Input Data for Solid Fuel Measurements

If you are using a heat input methodology based on calculation of hourly heat input from the mass of fuel combusted and its heat content, the petition and approval may require the submission of RT 351 for each hour in which mass and GCV values are available. If missing data procedures are used in RT 350 for the hour do not submit RT 351.

Field Descriptions and Instructions

Monitoring System ID. Report the same monitoring system ID reported in RT 350.

Gross Calorific Value (GCV). Report the hourly gross calorific value of the solid fuel in units of Btu per pound, determined according to the petition and approval for the alternative heat input methodology.

Mass of Fuel Burned During the Hour. Report the mass of fuel combusted during the hour, in pounds.

Hourly Fuel Feed Rate. Compute and report the hourly fuel feed rate in pounds per hour.

Fuel Usage Time. Report the portion of the hour during which the unit(s) combusted the fuel as 0.25, 0.50, 0.75 or 1.00. Round up to the nearest quarter hour. Alternatively, you may indicate the actual portion of the hour in which fuel was combusted to to a precision greater than a quarter of an hour, but no greater than a one hundredth of an hour.

(23) **RT 352: Supplementary Heat Input Data for Other Methodologies**

As part of a petition or as a condition of approval of the petition for the use of an alternative heat input methodology, the State agency may require the submission of hourly or other periodic information on the status of selected operating parameters for the unit. In some cases, RT 352 may be required for more than one parameter for each hour.

Field Descriptions and Instructions

Component ID. If there is no specific component associated with the information contained in this record leave this field blank.

Monitoring System ID. Report the same monitoring system ID reported in RT 350 for the date and hour.

Parameter. Identify the parameter for which hourly information is reported in this record. Use a parameter code approved by the State regulatory agency in consultation with the Acid Rain Division. Do not leave this field blank.

Operator. Identify the relationship between the parameter and the value established as the limit or specification using one of the following codes:

LT	Less than
GT	Greater than
LTE	Less than or equal to
GTE	Greater than or equal to
E	Equal to

Limit. Report the numerical limit associated with the parameter to the appropriate decimal places.

Units. Identify the units in which the limit is represented. Use a code consistent with the codes used in other record types or as approved by the State regulatory agency.

Hourly Value. Report the value associated with the parameter, expressed in the same units as the limit.

If the parameter is not associated with a numerical value or reading (for example, a parameter associated with a signal or visual inspection) leave this field and the previous three fields blank.

Parameter Status Flag. Report the status associated with the limit, indicating a "Y" for hours in which this parameter is within the specification and a "N" for hours in which it is not or for which the parameter value is not available. Report an "X" for hours in which the parameter is missing or invalid.

(24) RTs 420 through 423: Reporting for SO_2 Phase I Extension Units

These record types are designed for the reporting of SO_2 emission rates for inlet and outlet SO_2/diluent monitoring systems at units using Phase I control technology. For more information, see the EDR instructions for the Acid Rain Program.

X. DAILY QUALITY ASSURANCE DATA

A. RT 230: Daily Calibrations

Report all daily calibrations performed on NO_x, CO_2, O_2 or flow components to quality assure measured data, as required in the NO_x Budget Program Technical Guidance and by State regulation. Report all failed, passing and incomplete calibrations in component, system, and time order.

If a component is part of two systems (for example, a primary and backup system) report the calibration twice, once for each system using the appropriate system IDs. For flow monitoring systems comprised of two flow components, perform and report a daily calibration for each flow component in the system. For dual range monitors, perform and report daily calibrations for the instrument range(s) used during the day.

Conduct the daily calibration according to the requirements of 40 CFR 75, Appendices A and B. Daily calibrations validate the acceptability of emissions data from each monitoring component. The validation rules and criteria used for the NO_x Budget Program are the same as those used in the Acid Rain Program. See the revised 40 CFR Part 75, Appendix B, Section 2.1.5, (FR 59165, November 20, 1996) and the Acid Rain Policy Manual, Question 10.13.

Field Descriptions and Instructions

Instrument Span. Report the span value used to determine the appropriate calibration gas used for the check. The

span should be consistent with the span defined for the unit or stack at the high or low scale in RT 530.

Reference Value. Report the calibration gas value used in this injection.

Measured Value. Report the value measured by the instrument following the gas injection.

Results (CE or |R - A|). Report the results of the calibration test for this gas injection, as required by Part 75.

Alternative Performance Specification Flag. Indicate whether the test result was determined using the normal or low emitter specification allowed under Part 75.

Appendix A in Part 75 specifies that the calibration error of an 0_2 or CO_2 monitor is **always** expressed in percent O_2 or CO_2, rather than as a percentage of span. This is considered to be the "normal" calibration error specification and should have a "0" flag in RT 230 and 600. The alternate specification flag in these record types applies only to SO_2 and NO_x pollutant concentration monitors at facilities that are low-emitters of those pollutants.

Calibration Gas Level. Indicate whether the gas injection is zero (Z) or high (H) by using the appropriate code. Please note that mid-level (M) gas injections may be allowed only under specified circumstances after January 1, 2000 under Part 75 changes currently under consideration by EPA.

Span Scale. Indicate whether the component or the range of the instrument tested is high or low scale. If the unit or stack only requires monitors which measure at a single instrument range, enter "H" or leave this field blank.

B. **RT 231: Daily Leak Checks**

Perform and report a daily interference check according to Part 75 requirements for all flow monitors, including ultrasonic monitors, that are used for measuring and recording volumetric stack flow.

C. **RT 232: Daily QA Reference Checks for Non-CEMS Parameters**

For non-CEMS methodologies used for non-Part 75 NO_x budget units, State regulatory agencies may require specific checks to determine the acceptability of data on a daily basis. If this check compares a measured value to a reference value, use this record type to report the test and its results. Follow the policy regarding 26 hour validation and

start-up grace periods for daily calibrations developed by the Acid Rain Program to validate each hour of data. As necessary and requested, the State regulatory agency in consultation with the Acid Rain Division, will provide additional unit-specific or methodology-specific guidance for the completion of this record type.

D. **RT 233: Other Daily QA Checks**

Similarly, State regulatory agencies may require you to perform and report other daily QA checks to ensure the acceptability of data for a monitoring system or one of its components. Use this record type to indicate the date and hour in which the test was performed and the outcome of the test. As necessary and requested, the State regulatory agency in consultation with the Acid Rain Division, will provide additional unit-specific or methodology-specific guidance for the completion of this record type.

XI. **REPORTING DATA USING REFERENCE METHOD MONITORING SYSTEMS (RTs 260 - 262)**

For more information on the reporting of quality assurance information for each Reference Method run used to provide data as a backup monitoring methodology, consult the guidance provided by the Acid Rain Division in the Acid Rain Policy Manual, Section 21, the instrumental reference methods defined in 40 CFR 60, Appendix A, and the Acid Rain Program Submission Instructions, May 12, 1995.

Whenever you use a reference method backup monitoring system to report pollutant concentration data (NO_x, CO_2 or O_2) submit RT 260 for each hour of data reported and the associated quality assurance information in RT 261 for each run. In other words, submit one RT 260 for each hour of data reported in RTs 202, 210 or 211 from a reference method backup system. The corresponding RT 260 must have the same component/system ID, date and hour, and emissions value as its companion record. You must report RT 261 for each RM component/system for each run. Because the run length may be up to eight hours, you may report one RT 261 for up to eight RTs 260 associated with the run.

If you use Reference Method 2 as a backup reference method to measure stack flow, submit one RT 262 for each hour of data reported in RT 220 using Reference Method 2. Each RM run represents one clock hour, and therefore, for reporting purposes, each run is regarded as beginning on minute 00 and ending on minute 59. Please note that the total flow rate in scfh in RT 262 should be the same as the flow rate reported for the same hour in RT 220.

XII. QUALITY ASSURANCE AND CERTIFICATION DATA REPORTING

A. CEMS Certification and Periodic Quality Assurance Tests

All certification tests and periodic quality assurance tests performed under the NO_x Budget Program must be reported in the EDR in the appropriate record type. Do not report tests which are aborted or discontinued because of non-CEMS related equipment failures, such as power outages, reference method failures or a data acquisition failure; tests which are discontinued because of CEMS failures are considered failed tests and must be reported. The results of these tests are used to establish the validity of hourly emissions data.

(1) RT 600: 7-Day Calibration Error Test Data and Results

Report all 7-day calibration error tests completed for the NO_x Budget Program after July 1, 1997 in electronic format, either as certification test data or as part of a quarterly report. Information on tests performed prior to this date may also be submitted electronically, or may be required by a State regulatory agency on a unit-specific or general basis.

Field Descriptions and Instructions

Alternative Performance Specification Flag. Indicate whether the test result was determined using the normal or low emitter specification allowed under Part 75.

Appendix A in Part 75 specifies that the calibration error of an O_2 or CO_2 monitor is **always** expressed in percent O_2 or CO_2, rather than as a percentage of span. This is considered to be the "normal" calibration error specification and should have a "0" flag in RT 230 and 600. The alternate specification flag in these record types applies only to SO_2 and NO_x pollutant concentration monitors at facilities that are low-emitters of those pollutants.

Span Scale. Indicate whether the component or the range of the instrument tested is high or low scale. If the unit or stack only measures at a single instrument range, enter "H" or leave this field blank.

Test Number. For each set of 7-day calibration error records which comprise a single test, assign a unique test number for the system and component. You may reuse the test number for different systems and components if the tests are performed during different time periods, with no overlapping days. If you submit data for an incomplete or aborted test, assign and report a test number. If you submit hardcopy information on a test in a certification report or

submit other information about the test to EPA or the State agency, refer to the system and component IDs and the test number. Do not leave this field blank.

Reason for Test. Indicate the purpose of the test using one of the following codes:

C	Initial Certification
R	Recertification

Do not leave this field blank.

(2) **RTs 601 and 602: Linearity Checks**

Report all linearity checks completed for the NO_x Budget Program in electronic format, either as certification test data or as part of a quarterly report using RTs 601 and 602. RT 601 reports the results of each calibration gas injection. RT 602 reports the results for the linearity checks at each gas level (low, mid and high).

Report both completed and aborted tests. An aborted test is treated as a failed test. It is not necessary to report or to treat as a failed test, a linearity test which is discontinued because of a failure which is unrelated to instrument performance, such as a power outage, calibration gas problem or DAHS failure. If this type of event makes it impossible to complete a test, record the results and document the reason on-site (or at an alternative location known to the regulatory agency if on-site storage is not feasible).

Field Descriptions and Instructions for RT 601

Date and Time. Please note that the time for each gas injection should be unique. A test which includes gas injections performed simultaneously is invalid. Also, note that the gas injections at each level should be performed sequentially, so that two gas injections are never performed successively at the same level.

Instrument Span. Indicate the span of the component. The span value should be consistent with the span value reported in RT 530 for the unit or stack which is effective on the date and hour of the test for the scale indicated in column 66. The span value for the test should be the same for each of the nine gas injections.

Reference Value. Report the value of the calibration gas for each injection.

Measured Value. Report the value of the instrument measurement to the number of decimal places required for

hourly measured data and reported in the EDR. For example, report NO_x concentration to one decimal place.

Calibration Gas Level. Report the calibration gas level associated with the gas injection as either L, M or H. For high level injections the cal gas must be between 80 and 100% of the span reported in column 25; for mid level between 50 and 60% and for low level between 20 and 30%.

Span Scale. Indicate whether the test is for a high scale or low scale span value by entering either H or L. If the unit or stack only measures at a single instrument range, enter "H" or leave this field blank.

Test Number. For each set of linearity records which comprise a single test at either high or low scale, assign a unique test number for the system and component. You may reuse the test number for different systems and components if the tests are submitted in different quarterly reports. Use this same test number in RT 602 to report the results of the test at each gas level.

For a completed test at high scale span, for example, there will be nine RTs 601 and three RTs 602 associated with a test number, monitoring system and component. A NO_x linearity check at span levels of 50 ppm or less may include only six gas injections and two RTs 602.

If you submit data for an incomplete or aborted test, assign and report a test number to the reported RTs 601. Assign a new test number to the subsequent component test.

If you submit hardcopy information on this test in a certification report or submit other information about the test to EPA or the State agency, refer to the system and component IDs and the test number.

Do not leave this field blank.

Indicator of Aborted Test. If you abort the linearity check without completing the nine gas injections, indicate this by reporting an "A" in column 69 for each of the gas injections associated with the test. The component is considered out-of-control. Do not report RT 602 for an aborted test.

Field Descriptions and Instructions for RT 602

Instrument Span. Indicate the span of the component. The span value should be consistent with the span value reported in RT 530 for the unit or stack which is effective on

the date and hour of the test for the scale indicated in column 72. The span value for the test should be the same for each of the three result records and associated nine gas injections reported in RT 601.

Mean of Reference Values. Calculate and report the mean or average of the reference values for the specified calibration gas level.

Mean of Measured Values. Calculate and report the mean or average of the measured values for the specified calibration gas level.

Results (Linearity Error or the Absolute Value of R - A). Calculate and report the linearity error for each calibration gas level using Equation A-4 of Part 75 Appendix A, Section 7.1. Alternatively, calculate the result as provided in Part 75, Appendix A, Section 3.2.

Alternative Performance Specification Flag. If you use the alternative performance specification in Section 3.2, report a "1" in this field.

Calibration Gas Level. Report the cal gas level associated with the results as either L (low), M (mid) or H (high).

Span Scale. Indicate whether the test is for a high scale or low scale span value by entering either H or L, consistent with the scale indicated in RTs 601 for the test.

Test Number. Report the test number used for the set of gas injections in the corresponding set of RTs 601. Do not leave this field blank.

Reason for Test. Indicate the purpose of the test using one or more of the following codes:

C	Initial Certification
R	Recertification
Q	Periodic Quality Assurance
G	Periodic Quality Assurance Test Performed in Grace Period

If more than one code applies, submit two codes (for example, RQ, for a linearity test performed as a recertification test and to meet the quarterly linearity requirement). Do not leave this field blank.

(3) RT 603: Leak Checks

Report all leak checks completed for stack flow monitors for the NO_x Budget Program in electronic format, either as certification test data or as part of a quarterly report using RT 603.

Field Description and Instructions

Status. Indicate the outcome of the test using the following codes:

P	Pass
F	Fail

Reason for Test. Indicate the purpose of the test using one or more of the following codes:

C	Initial Certification
R	Recertification
Q	Periodic Quality Assurance
G	Periodic Quality Assurance Test Performed in Grace Period

If more than one code applies, submit two codes (for example, RQ, for a test performed as a recertification test and to meet the quarterly leak check requirement). Do not leave this field blank.

For more information on the criteria and requirements associated with performing tests during a "grace period" see the Acid Rain Policy Manual, Questions 15.16 and 15.27.

(4) RTs 610 and 611: Relative Accuracy Test Audits (RATAs)

Report all relative accuracy tests completed for the NO_x Budget Program in electronic format, either as certification test data or as part of a quarterly report using RTs 610 and 611. RT 610 reports the results of each run. RT 611 reports the relative accuracy for the load level.

Report both completed and aborted tests. An aborted test is treated as a failed test. Report only RTs 610 for aborted tests; it is not necessary to report RTs 611. It is not necessary to report or to treat as a failed test, a test which is discontinued because of a failure which is unrelated to instrument performance, such as a power outage or reference monitor failure. If this type of event makes it impossible to complete a test, record the results and document the reason on-site (or at an alternative location known to the regulatory agency if on-site storage is not feasible).

Field Descriptions and Instructions for RT 610

Monitoring System ID. Please note that the monitoring system ID is an essential identifier for this record type. Relative accuracy tests are performed and reported only on a system basis. For example, note that the relative accuracy test for a NO_x emission rate system is performed and determined on a lb/mmBtu basis; it is not performed and submitted on an individual component basis.

Run Start and End Date and Time. Indicate the precise start and end times for each individual run. "Run" times should not overlap.

Units of Measure. Indicate the units of measure in which the run results are reported using one of the following codes:

1	ppm
2	lb/mmBtu
3	scfh
4	% CO_2
5	% O_2
6	mmBtu/hr (NBP only)
7	%H_2O

Value from CEM System Being Tested. Report the measured value from the CEM being tested in the appropriate units for the run.

Value from Reference Method. Report the measured value from the reference method monitor to which the CEM is being compared. This value should reflect adjustment, as necessary, for moisture and/or calibration bias.

Run Number. Assign a run number to each measurement, beginning with the number 1. Because all runs must be reported whether or not they are used to calculate the relative accuracy test, run numbers must be consecutive and represent time order. Do not "skip" a run number.

RATA Run Status Flag. Indicate the whether the run data was used to determine relative accuracy using one of the following codes:

0	Run Not Used in RATA Calculation
1	Run Used in RATA Calculation
9	Test Aborted

The code "9" which was defined under the Acid Rain Program to indicate a test which was "not used" is no longer a valid concept. All tests performed should be reported; tests which are invalid because of failures unrelated to the

performance of the CEMS being tested are not reported at all, and therefore have no code associated with them. This code should be used to indicated aborted tests.

Operating Level. Indicate the load level at which the relative accuracy test occurred. For single load tests, this should be the normal load. For multi-level tests, indicate whether the test is performed at low, medium or high load levels.

Use one of the following codes:

L	Low
M	Medium
H	High
N	Normal

Gross Unit Load. For each run, report the load level in megawatts or steam load during the run. The units for this value (either megawatts or steam in 1000 lb/hr) should be consistent with the units used to define load levels in RT 535 of the monitoring plan.

Test Number. For each set of relative accuracy runs which comprise a single relative accuracy test at normal load or for all runs associated with two or more load levels for multi-load level tests, assign a unique test number for the system and set of test records.

For example, assign the test number "1" to a normal load relative accuracy test for a NO_x emission rate system. If this test is aborted or fails, assign the test number "2" to the successful second test. For Test Number "2" there will be a minimum of nine RTs 610 (one for each run) and only one RT 611 (with the test result).

For a multi-load flow RATA which is performed at low and mid load levels, assign a test number "1" to all the low and mid level runs for this system and test in RT 610 and to the two RTs 611 which represent the results at the low and mid load levels. The run and result records for each load level can be distinguished (and linked together) by the combination of test number and load level, while the test number links together the load level tests which meet the multi-level test requirements.

You may reuse the test number for the same system if the tests are performed and reported in different quarters.

If you submit data for an incomplete, aborted test, assign and report a unique test number to the reported RTs 610.

If you submit hardcopy information on this test in a certification report or submit other information about the test to EPA or a State agency, refer to the system ID and the test number.

Do not leave this field blank.

Field Descriptions and Instructions for RT 611

Monitoring System ID. Report the same monitoring system ID submitted in RT 610 for the test. Do not leave this field blank.

RATA End Date and Time. Report the date and time of the last run performed as part of the test, whether or not the run was "used" in the calculation.

Reference Method Used. Identify the reference method(s) used to determine relative accuracy by reporting the number and letter associated with the method. If more than one method is used, separate each method by commas (for example, "3A,4,7E").

Units of Measure. Indicate the units of measure in which the run results are reported using one of the following codes.

1	ppm
2	lb/mmBtu
3	scfh
4	$\%CO_2$
5	$\%O_2$
6	mmBtu/hr (NBP only)
7	$\%H_2O$

This should be consistent with the units reported for the test in RT 610.

RATA Calculation Fields: Column 35 through 110. Report the results of the relative accuracy test and interim values, as required and defined for the appropriate test method and in Part 75, Appendix A.

Adjustment Factor. Report the Adjustment Factor resulting from the test, as determined by State regulations and Part 75, Appendix A. For multi-level flow tests, report the BAF for each specific load level in this field. For non-flow CEMS for which the relative accuracy reported in column 100 is less than or equal to 10.0 percent, report the Bias Adjustment Factor or 1.000, if the Bias test is passed. For non-flow non-Part 75 CEMS for which the relative

accuracy reported in column 100 is greater than 10.0 percent, report the default adjustment factor of 1.200.

Operating Level. Report the load level as H, M, L or N, consistent with the load level reported in RT 610.

Average Gross Unit Load. Report the average gross unit load in megawatts or steam load for all runs used in the relative accuracy calculation for this load level.

Alternative Performance Specification Flag. Report "0" for relative accuracy based on a determination of relative accuracy as a percentage of reference method value. Report a "1" for relative accuracy determined for low emitters.

Test Number. Report the test number assigned for this test, consistent with the instructions for RT 610.

Reason for RATA. Indicate the purpose of the test using one or more of the following codes:

C	Initial Certification
R	Recertification
Q	Periodic Quality Assurance
G	Periodic Quality Assurance Test Performed in Grace Period

If more than one code applies, submit two codes (for example, RQ, for a RATA test performed as a recertification test and to meet the annual RATA requirement). Do not leave this field blank.

For more information on the criteria and requirements associated with performing tests during a "grace period" see the Acid Rain Policy Manual, Question 15.27.

Number of Load Levels Comprising Test. Indicate for all tests the number of load level tests which are required for a successful RATA. For gas RATAs, report "1"; for flow RATAs, report 1 - 3, as appropriate.

Bias Adjustment Factor for Multiple Load Tests. If the number of load levels tested is more than one and the test passes the relative accuracy standard, report the BAF which will be applied to data reported from the system. Report the same BAF for each RT 611 reported for the test. (Load-specific BAFs are reported in column 111.) If the system has failed the relative accuracy test or performed only a single-load RATA, leave this field blank.

(5) Ongoing Quarterly Reporting of RT 611 Results To Support Emissions Data

Following each relative accuracy test, report the resulting RT 611 for the test in each quarterly report (for any quarter in which operation occurs) until the next RATA is performed. For a quarter in which a RATA is conducted, report both RT 611 for the previous RATA and the RTs 610 and 611 for the RATA performed during the quarter.

For multi-load RATAs which pass the bias test at normal load, report the normal load RT 611. For systems which fail the normal load bias test, report the RT 611 for the load level resulting in the BAF (i.e., the BAF applied to the reported data).

The purpose of this requirement is to facilitate access to relative accuracy results which determine the adjustment factor which the company applied to each hour of measured data during the quarter.

Please note that this is a new requirement for NO_x Budget Program units which will apply to Acid Rain units beginning on January 1, 2000.

(6) RT 621: Cycle/Response Time

Report all cycle/response time tests completed for the NO_x Budget Program in electronic format, either as certification test data or as part of a quarterly report. Perform these tests according to the procedures under 40 CFR Part 75, Section 6.4.

(7) RT 623: On Line/Off Line Calibration Check

In order for a daily calibration performed during a period in which a unit is not operating to be accepted as a valid calibration, you must submit data demonstrating that the results of an off-line calibration are comparable to the results of an on-line calibration. Report the results of this demonstration in RT 623. For each component and demonstration, submit four records, two for the high level calibration gas injections and two for the zero level injections.

Field Descriptions and Instructions

Columns 1 through 72. See the instructions for these fields for RT 230.

Off-line/On-line Indicator. Identify calibrations performed during a non-operating hours with the code "OFF" and during operating hours with the code "ON". Do not leave this field blank.

Reason for Test. Indicate the purpose of the test using one of the following codes:

C Initial Demonstration
R Recertification Demonstration

Do not leave this field blank.

(8) RT 624: Miscellaneous QA Test/Activity

For NO_x budget units only, additional QA tests or actions may be required as part of a petition or alternative heat input methodology approved by the State regulatory agency. For these tests, report according to the directions provided by EPA and/or the State agency as a condition of the approval.

(9) RTs 625 and 626: Fuel Flow Calibration Records

If you use in-line comparisons to determine the accuracy of your fuel flowmeter on an ongoing basis, report the results of the accuracy tests in RTs 625 and 626. If you use other methods of verifying the accuracy of the fuel flowmeters on an annual basis, report the date, type of test the monitoring system tested, and the results in RT 624. States and EPA may require more detailed information on fuel flowmeter accuracy in specific record types or through the submission of supplemental information through additional guidance or regulation, following resolution of regulatory changes under consideration by EPA for the Acid Rain Program.

For specific information on reporting in RTs 625 and 626, see Part 75, Appendix D and the Acid Rain Policy Manual.

B. Appendix E Test Reporting

(1) Requirements for Appendix E Tests to Establish NO_x Correlation Curves

To establish a NO_x correlation curve based on Part 75, Appendix E requires that you perform reference method testing at a minimum of four load levels. The NO_x Budget Program allows testing at fewer than four load levels with prior State approval. Report the test data from a minimum of nine runs for each load level in RT 650. Report the test results for each load level reference method test in RT 651. For each run at each load level reported in RT 650, also report the oil and/or gas combusted and the heat input associated with each fuel in RTs 652 and 653. Use the four RTs 650 to define the upper and lower bounds of each of the NO_x correlation curve segments reported in RTs 560. Assign a unique test number to the data and results and report this test number in all record types associated with the test.

(2) Requirements for Appendix E Tests to Establish Unit-Specific Defaults

To establish a unit-specific default NO_x emission rate, perform Appendix E reference method testing at each of the required load levels, as described above and required in Appendix E. Report the results of each run in RTs 650 and indicate the highest NO_x emission rate recorded during any run by reporting an "H" in column 68 of the appropriate RT 650. Report only one record with this indicator; for all other records leave this field blank. Do not report any RTs 651, 652, or 653. Assign a unique test number to the test results and report this test number in each of the RTs 650.

(3) Requirements for Identical Unit Tests

If you perform representative tests for a group of identical units, either to determine a NO_x correlation curve or unit-specific defaults, report the required RTs 650 through 653, as described above for each test conducted.

In addition, submit a RT 660 for each unit which is part of the identical unit group, whether or not testing is performed at that unit. If you perform testing to establish a NO_x correlation curve, also submit RTs 661 to report the average of the test results at each load level for the identical unit group. Include RTs 660 and 661 in group ID, ORISPL code and unit ID order at the bottom of the quarterly report filing.

Field Description and Instructions for RT 660

Group ID. Assign a Group ID, beginning with the letters "GP" and followed by the ORIS Code or Facility ID of one of the units in the group. Because Facility IDs are unique for the NO_x Budget Program, this will ensure that the Group ID number is also unique. Do not leave this field blank.

ORIS Code, Plant Name, Unit ID. Include identifying information for each unit in the group. There will be one RT 660 for each unit, including the unit identified in Column 4. Do not leave these fields blank.

Test Status. Indicate whether a test was performed for the unit identified in this record by reporting one of the following codes:

AE	Appendix E Testing
OT	Other Testing
NT	No Testing Performed

Test Date for Unit. If tests are performed at the unit, report the date on which the testing was completed. If no tests were performed, leave this field blank.

Default Rate from Identical Unit Testing. If the purpose of the tests is to establish a default emission rate, report the resulting rate to three decimal places.

Purpose of Group Tests. Identify the purpose of the tests performed using the following codes:

AE	Appendix E Testing
DF	Default Rate Testing

Field Description and Instructions for RT 661

Group ID. Identify the Identical Unit Group to which these test results apply. Do not leave this field blank.

Test Completion Date. Identify the date on which the last test was performed for the group. This date is needed to determine when new tests must be performed for the next five year cycle.

Operating Level. Identify the operating level at which testing was performed at each of the identical units.

Average Emission Rate for All Tests at this Level. Report the average NO_x emission rate to three decimal places at the load level for tests performed at each of the identical units.

Average Heat Input Rate for All Tests at this Level. Report the average heat input rate at the load level for tests performed at each of the identical units.

C. QA Test Extension Requests

(1) RT 698: Linearity Test Exemption Claim

If you elect to claim an exemption from the quarterly linearity test requirement, you must submit a RT 698. If the exemption is based on fewer than 168 unit/stack operating hours during the quarter, submit a single RT 698 for the unit/stack and leave the component and system ID fields blank to indicate that all systems and components qualify. Submit the record in the quarter for which the exemption is claimed. For example, if a linearity would be "due" by 12/31/97, submit RT 698 in the fourth quarter 1997 quarterly report.

Field Descriptions and Instructions

Component and Monitoring System ID. If the exemption is based on fewer than 168 unit/stack operating hours, you may leave these fields blank. Otherwise, submit a record for each affected component and monitoring system ID.

Basis for Exemption. Identify the reason for the exemption (and extension) using one of the following codes:

1 Fewer than 168 unit/stack operating hours in quarter

2 High analyzer range not used during calendar quarter (dual span only)

(2) **RT 699: QA Test Extension Claim Based on Grace Period**

If you elect to claim a "grace period" extension of a QA test, you must submit a RT 699 to claim the test deadline extension. Submit this record in the quarter containing the grace period. For example, if the linearity test is "due" by 12/31/97, submit a RT 698 in the first quarter 1998 quarterly report.

Field Descriptions and Instructions

Component and Monitoring System IDs. Submit a record for each affected test, identifying it by component and monitoring system ID for linearity tests and by system ID only for relative accuracy tests.

Type of Test. Identify the type of test affected using one of the following codes:

K Leak Check
L Linearity
R RATA (Acid Rain Program Only)

Beginning of Grace Period. Report the date on which the grace period begins. This will usually be the first day and hour of a new quarter or the first hour in which a unit or stack operates in the quarter.

Date and Hour of Completion of Required Test. Report the date and hour in which the required test was completed or the date and hour in which the maximum number of operating hours following the beginning of the grace period have occurred.

Number of Unit/Stack Operating Hours in the Grace Period. Report the number of hours (or partial hours) in

which the unit or stack operated during the grace period. Partial hours are treated as whole hours for purposes of determining the length of the grace period.

XIII. CERTIFICATION RECORDS

The 900-level records enable a utility to add electronic versions of the AAA/AAAR signature, certification statements, and other cover letter information directly into the electronic quarterly report. An electronically-submitted quarterly report file containing these new record types is deemed to be completely self-contained; NO PAPER COVER LETTER or DISKETTES should be mailed to EPA. These records are required in all electronic submissions for the NO_x Budget Program.

The five record types for the NO_x Budget Program are:

Record Type Code	Description
930	Part 75 Certification and AAR/AAAR Signature
931	Part 72 Certification Statement, verbatim
910	Cover Letter Text (optional) (file specific)
920	Cover Letter Text (optional) (not file specific)
999	Contact Person Information

A. Record Type 930: NO_x Budget Program Certification and Signature

Each quarterly report should contain only one Record Type 930, containing the NO_x Budget Program certification and AAA/AAAR signature. Record Type 930 identifies (by last name, first name, and middle initial) the AAA or AAAR responsible for "signing" the cover letter, and also indicates the signature date. The record type 930 also contains one of three codes (CERTIFY, CERTIFY CONTROLLED, or CERTIFY DEFERRED) to identify the appropriate certification statement required for the Stack and/or unit(s) contained in the quarterly report:

(1) For most reports submitted by certified units, the code "CERTIFY" is appropriate. This code is also appropriate for a report submitted for a unit that did not operate during the quarter. Use this code unless one of the others applies.

(2) If the quarterly report is for a stack or unit with add-on emission controls, then the code "CERTIFY CONTROLLED" is appropriate.

(3) "CERTIFY DEFERRED" should be reported for a non-operating, affected unit that is not yet certified under the NO_x Budget Program.

Table 5 of the EDR V2.0 contains the certification text represented by each of these three certification codes. State regulations may contain alternative certification language.

B. RT 931: NO_x Budget Program Certification Statement

Submit RT 931 to include the verbatim certification statement. Each RT 931 contains a number (in columns 4 and 5) indicating which of the lines of certification text is contained in that record, followed by that line of the certification text (verbatim) as shown in the following example for the first line of the certification statement:

Example RT 931:

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90101I am authorized to make this submission on behalf of the
owners and
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C. Record Types 910 and 920: Other Cover Letter Information (optional)

RTs 910 and 920 enable owners and operators to electronically report information which would otherwise be provided in a paper cover letter. Frequently AARs must provide additional information when a significant change has occurred in daily operations, such as the installation of a new pollution control device which would necessitate a change in the unit or stack monitor availability.

RTs 910 and 920 are optional; if you do not need to report any additional information, only include RTs 930 and 931 in the quarterly report. You may include as many RTs 910 as necessary to convey critical quarterly reporting information. In the last RT 910-920, include the word "END" to indicate that this is the last record in the set.

D. RT 999: Contact Person Record

This is an optional record which can be used to identify a contact person other than the AAR or AAAR who can respond to questions the quarterly report or provide updated phone or e-mail information about an AAR or AAAR.

RECORD TYPE INDEX

RECORD TYPE INDEX (cont.)